THE ORCHID REVIEW.

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BRASSOCATTLEYA APOLLO.

(*See page* 194).

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THE

ORCHID REVIEW

An Illustrated Monthly Journal

OF ORCHIDOLOGY

EDITED BY R. ALLEN ROLFE, A.L.S., F.R.H.S.

VOLUME XXVII

1919

Kew:

FRANK LESLIE & CO., 12, LAWN CRESCENT.

London Agents:

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VOL. XXVII. JANUARY—FEBRUARY, 1919. NO. 313-314

THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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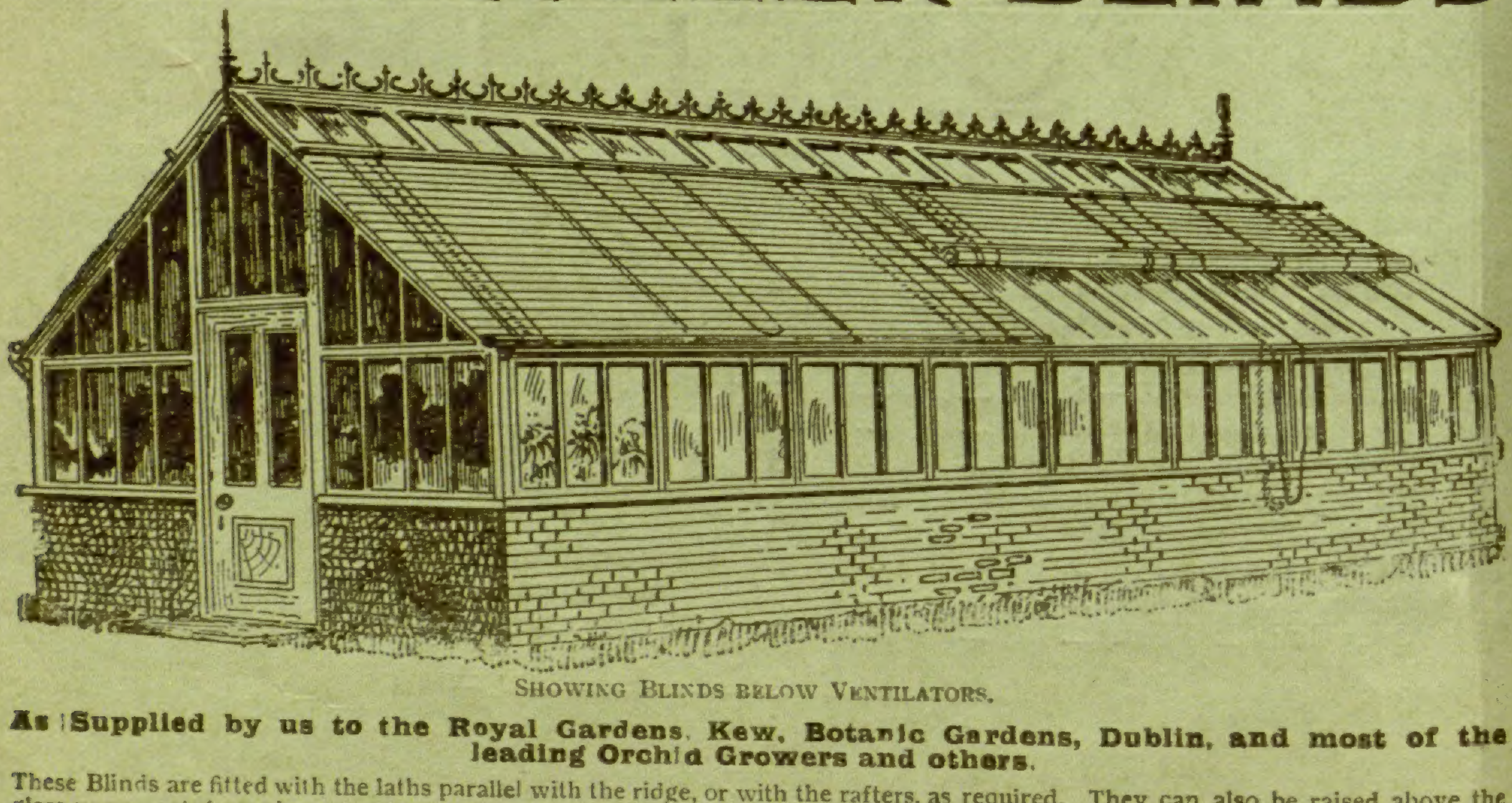

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The Orchid Review

VOL. XXVII. JANUARY-FEBRUARY, 1919. NO. 313-314.

OUR NOTE BOOK.

THE cessation of hostilities has had a bracing effect upon Orchidology, and we have again had the pleasure of seeing two magnificent Gold Medal groups at the R.H.S. meetings, one staged by Messrs. Armstrong & Brown at the last meeting of the year, and another by Messrs. Charlesworth & Co. at the first January meeting. We have also a provisional promise of a resumption of the Spring Shows at Chelsea next May, by which time it is hoped that the Royal Horticultural Hall will again be available for the Society's meetings. And we are pleased to hear that an attempt is being made to hold the next Quinquennial Show at Ghent in 1921. The prospect is cheering, and however long and difficult the work of reconstruction may be, it is evidently being taken in hand with a confidence that goes far to ensure success.

We have now some further information respecting collections in the War area, from which we have been cut off for years. It will be found on later pages, and gives some idea of the extreme difficulties under which our Belgian confreres have laboured during a period of over four years. It also describes the terrible experience of M. Theodore Pauwels in seeing his house and his fine Orchid Establishment at Meirelbeke completely demolished only a few hours before the signing of the Armistice. His family were removed to a place of safety two days before, when the destruction began. By that tragedy over sixty thousand seedling Orchids are said to have been destroyed, and only a small number could be saved owing to a severe spell of frost. We are familiar with the place, having visited it twice, and we offer to M. Pauwels our sincere sympathy in his serious loss. He pluckily proposes to reconstruct the nursery, and it will doubtless be seen to that the bill goes to the proper quarter.

It is one of the tragedies of a war of unprecedented barbarity, and an example of what may occur under an insane ambition for world domination regardless of all other considerations. Civilisation narrowly escaped total submergence, largely by the intervention of our brethren across the seas,

and they are now happily assisting in organising a world that will be safe to live in, and which alone, so far as all human probability is concerned, can prevent a recurrence of these barbarities in the future. We believe it will succeed, indeed it must succeed, for there will be no room for Orchidology, or any other of the joys of existence, if the resources of science are to be squandered in a mad race for the next and greater cataclysm.

The return to normal conditions will not be easy. The relief experienced at the cessation of hostilities was a natural reaction from the intense strain under which we have lived for the last four years, but it has been followed by a feeling of dismay as we contemplate the magnitude of the wreck, and the derangement of the economic machine. The work of restoration and reconstruction is the first and most urgent problem, but even this cannot be carried out without security, and the way in which the Peace Conference is tackling the difficult problems with which it is confronted inspire a feeling of confidence that the work will be accomplished in a satisfactory way. A work of such magnitude cannot be carried through in a few days, and the transition period until peace is signed is not likely to pass without its doubts and uncertainties. But events are moving rapidly towards the desired end, and all can help to expedite the good work.

SOPHRONITIS HYBRIDS.

FOR brilliancy of colour, there is nothing to compare with the hybrids of Sophronitis grandiflora, but they are, unfortunately, rather difficult to raise, and in some cases not of very vigorous constitution. Steady progress, however, is being made, and among our most successful raisers must be numbered Mr. R. G. Thwaites, of Streatham, who has long made a speciality of the group, and from whom we have received interesting flowers on numerous occasions. Mr. Thwaites now sends four others, three of them being novelties flowering for the first time. He remarks: "I have always chosen the good-shaped, dark Sophronitis as a parent, instead of the coarser brick red, somewhat starry variety, which may possibly have added to the difficulty of raising the seedlings." The latest additions are as follows:—

SOPHROCATTLEYA RAMILLES (Sc. warnhamensis × C. Empress Frederick) most resembles the Cattleya parent in general character, the lip being ample, and carmine-purple in colour, with some orange on the disc. The sepals and petals are broad, and light rose-purple in colour. The first flower of the cross was noted at page 48 of our twenty-fifth volume. The plant which received an Award of Merit from the R.H.S. in March, 1918,

under the name of Sc. Mrs. J. Ansaldo (*O.R.*, xxvi. p. 89) will rank as a variety of Sc. Ramilles.

SOPHROCATTLEYA SISTRON (S. grandiflora × C. Adula) is a flower of an intense crimson shade, while the shape of the lip, with its small rounded side lobes, recalls the pollen parent. Mr. Thwaites remarks that it is from a tiny plant, with a pseudobulb only 2½ inches high, and that the flower is of a lovely colour.

SOPHROCATTLÆLIA SOUVENIR (S. grandiflora × Lc. Ballii) is a charming little thing, the scape bearing two flowers, of a nearly uniform light cherry red, most like the Sophronitis in shape, and with a few yellow lines on the disc of the lip. This also is from a very small plant which has not nearly reached its full development.

ROLFEARA RUBESCENS (Sophrocattleya Blackii × Brassocattleya Leemaniæ).—This is a novel and interesting hybrid, which combines the characters of three genera, Brassavola, Cattleya and Sophronitis, and thus comes under the R.H.S. rule for naming multigeneric hybrids. Mr. Thwaites therefore desires that it should bear the name of Rolfeara, in recognition of the Editor's long services to Orchidology. The flower shows unmistakably the Brassavola shape, and there is a trace remaining of the fringe of the lip. The colour of the sepals and petals may be described as salmon-rose, with a somewhat darker lip, on the disc of which are traces of the characteristic yellow veining of Cattleya Dowiana aurea. The flower arrived in advance of the letter, and we immediately detected the influence of the three species Brassavola Digbyana, Cattleya Dowiana, and Sophronitis grandiflora but, of course, could not tell in what way they were combined. The history shows that Cattleya Dowiana aurea comes in through both sides of the ancestry. Mr. Thwaites remarks that the Brassocattleya Leemaniæ used is a particularly fine one, probably due to selection of the Brassavola parent, in which the tawny colour sometimes seen was entirely absent. Bc. Leemaniæ has also been used as the pollen parent with the following Sophrocattleyas, Atreus var. gloriosa, Doris, Dorilla, Saxa, Thwaitesiæ, and Wellesleyæ, and the seedlings are expected to bloom shortly. He adds: "We have been unable to get a pod to set on Brassavola itself or on the primary Brassavola hybrids. Even when the pod is on the Sophronitis side, the seed is very difficult to raise, and although I have plants of a number of varieties, generally speaking, there are only a few of each cross."

While dealing with the group we may mention another hybrid which has inadvertently received a second name. Sophrocatlælia Rafaeliæ (Sl. Psyche × C. Rafaeliæ) flowered with Mr. Thwaites, in February, 1918, and was described in *O.R.*, xxvi. p. 59. The one shortly afterwards exhibited by Messrs. Flory & Black as Scl. Beta (*O.R.*, xxvi. p. 91) will rank as a variety of Scl. Rafaeliæ.

ODONTOGLOSSUM HUMEANUM.

AN interesting hybrid Odontoglossum is now flowering at Kew. As long ago as May, 1899, we remarked in the *Orchid Review* (p. 277), in an account of the collection of F. H. Moore, Esq., Royal Infirmary, Liverpool, "With the hope of obtaining seedlings of Odontoglossum Humeanum, we then and there crossed and recrossed O. Rossii and maculatum, but the result of these crosses must be left for the present." In March of the following year Mr. Moore wrote that the capsule of O. maculatum × Rossii had ripened, but that the strain had killed the plant. The seeds had been sown on three pots of Odontoglossum maculatum. Somewhat later he again reported: "I am much delighted and somewhat astonished to find a nice batch of seedlings. Some of them are an eighth of an inch across, and resemble small Spanish onions" (*O.R.*, viii. p. 240). In 1906 we hear of the cross again, in the collection of Sir Frederick Wigan, Bart., Clare Lawn, East Sheen, when the plant was six years old. It is remarked: (*O.R.*, xiv. p. 299). "Its progress has been rather slow, and as Mr. Moore's house is scarcely suitable for Odontoglossums, and Mr. Young had kindly consented to take charge of the plant, it was moved to its new quarters this spring. It is now suspended by the side of a vigorous plant of O. Humeanum, and on calling to see it we find that it is making a good growth, and, apart from accidents, its flowering is only a question of time, as Mr. Young is very successful with these dwarf Mexican Odontoglossums." The following year Sir Frederick Wigan died, and as a new home had to be found, Mr. Watson kindly undertook the care of it at Kew, with the hope of bringing it to the flowering stage. It progressed slowly in the Odontoglossum house for some years, when a suggestion was made to try it in the Intermediate house, where at last, when nineteen years old, it has produced a spike of four flowers. And it has proved to be precisely what we anticipated.

The origin of O. Humeanum has been long in dispute. It was originally described in 1876 (*Gard. Chron.*, 1876, i. 170), and Reichenbach remarked: "When I opened the box containing the peduncle and a leaf of this plant lately, by candlelight, I was immediately struck by the similarity of the flower to O. cordatum, though lip and bracts were those of O. Rossii." The plant had flowered in the collection of Mr. Burnley Hume, and Mr. Harry Veitch, who sent the specimen, had afterwards written: "I could not help thinking, from the formation of the sepals and the colouring, it must be a natural cross with cordatum."

Three years later Reichenbach described an Odontoglossum received

rom Messrs. Veitch as O. aspersum (*Gard. Chron.*, 1879, i. p. 266), remarking, "No doubt this is a new hybrid, the third one (after Humeanum and vexativum) in this affinity, standing between O. maculatum and Rossii." . . . The short, broad bracts and the short sepals exclude the idea of O. cordatum (so much resembling O. Humeanum). The white lip and the blotches of the sepals belong to O. Rossii. It must be regarded as O. maculatum var. Rossii" (the "var." probably a misreading of "×.")

Messrs. Veitch enumerated both aspersum and Humeanum as varieties of O. Rossii (*Man. Orch.*, i. p. 65), though considering them different, and admitting their hybrid origin, remarking also that the O. Humeanum of some collections is but a slight deviation from aspersum.

Somewhat later O. Humeanum was figured (*Reichenbachia*, ser. 1, ii. p. 75, t. 82), when it was remarked: "O. Humeanum is universally considered to be a natural hybrid between O. Rossii and O. cordatum, but a comparison of the shape and structure of the flowers leads us to think that there is less of O. cordatum and more of O. maculatum in it, the characters of the latter being also observable in habit of growth." This view we also took in a revision of the Mexican natural hybrid Odontoglossums (*O.R.*, ix. p. 260-262). In fact we have never seen a natural hybrid that combined the characters of O. cordatum and O. Rossii, though that between O. maculatum and O. Rossii is represented at Kew from seventeen different sources. Nor can we find that O. cordatum and O. Rossii anywhere grow together. The two others evidently grow together, and there are native specimens from the same collectors, obtained at the same altitudes of 7000 to 9000 feet, while those of O. cordatum are different in both respects. On the whole O. cordatum is a more southern plant, and we believe that it occurs at a lower altitude. If ever the Reichenbachian Herbarium is accessible perhaps the doubt will be cleared up, but at present we cannot find conclusive evidence of the existence of a natural hybrid between O. cordatum and O. Rossii. It would be interesting if someone would attempt to raise one artificially.

The wild hybrid varies rather in colour; the artificial one has a pale primrose ground colour, the sepals being closely blotched with red-brown throughout, and the petals on their basal third. The crest of the lip is pale yellow, with a few minute brown dots, and the back of the lip is flushed with pale violet. It may be interesting to add a few words as to the history of the plant. The two species being in bloom in Mr. Moore's collection led to a remark about the disputed origin of O. Humeanum, and Mr. Moore invited the writer to make the cross. Ultimately but one seedling survived, and as it did not seem inclined to bloom Mr. Moore invited me to try and find a home for it where such plants were grown successfully. The rest is on record. It has been rather a long trusteeship,

but the result in the end is satisfactory, and I believe that this interesting plant will continue to find a home at Kew, where also the only artificially raised O. Andersonianum that I know of is again in bloom. Its history has already been given (*O.R.*, xviii. p. 212), and part of the plant was afterwards presented.

R. A. ROLFE.

THE REVISION OF PRITZEL.

WITH the programme for the coming year, the Royal Horticultural Society has issued a leaflet respecting the revision of *Pritzel's Icones Botanicarum*, a work which is already in hand, under the supervision of a Committee appointed by the Society. The original *Icones Botanicarum*, compiled by Dr. G. A. Pritzel, was published in 1866, and is an Index of published illustrations of every plant then known, and it contains over 100,000 references to figures, the book and page being given in each case. Such a work was and is invaluable to those engaged in botanical or horticultural research, but as the last fifty years have been more productive of new plants than any previous half century, the necessity for revision and enlargement has been obvious for a long time past, and would have been carried out earlier had not war imposed a check. It is estimated that the new work will include about 250,000 references, and cost at least £3,500, possibly £4,000. Towards this cost the R.H.S. has voted £500 and the Veitch Memorial Trustees £100. The fund was started with £250 from the International Horticultural Exhibition held in 1912. As the financial responsibility rests with the R.H.S., subscriptions are invited, and it is hoped that everyone, whether a Fellow of the Society or not, who is interested in plants botanically or horticulturally, will make some contribution to a work which for the next 100 years at least will be the standard work of the kind. The names of those subscribing £1 1s. will be published in the new work, every subscriber of £15 or upwards will receive a presentation copy; a subscriber of £50 will receive a copy bound in half-calf; and a subscriber of £100 will receive a copy bound in calf or vellum. The revision is being done at Kew, where the Director has found accommodation for the typists who are preparing the manuscript. The members of the Pritzel Revision Committee are: Prof. I. Bayley Balfour, Mr. E. A. Bowles, Mr. F. J. Hanbury, Capt. Arthur W. Hill, Dr. B. Daydon Jackson, Mr. Gerald W. Loder, Sir Daniel Morris, Sir David Prain, Dr. A. B. Rendle, Dr. O. Stapf, and Sir Harry J. Veitch.

The revision of Pritzel was the subject of a lecture, by Dr. B. D. Jackson, at the R.H.S. meeting on January 28th, when the history and objects of the work were explained.

BLUE ORCHIDS.

AN interesting paper on Blue Orchids, by Sir Jeremiah Colman, Bart., has just appeared in the *Gardeners' Chronicle*, largely with reference to a series of varieties approaching this colour which are grown in the collection at Gatton Park. In an introductory note he speaks of Vanda cœrulea as the only truly Blue Orchid known to him, though he suggests that to the marvels of hybridisation already accomplished a cross may yet be added between this beautiful Vanda and some other species, resulting in a series of genuinely Blue Orchids.

Among so-called Blue Orchids Sir Jeremiah alludes to the pretty Dendrobium Victoria-Regina — though requiring the imagination of Shakespeare to make a blue of it—Bollea cœlestis, Rhynchostylis cœlestis, and Vanda cœrulescens, and, so far as the Gatton Park collection is concerned, the treasures include a Cattleya Trianæ with a very dark lip, Dendrobium Phalænopsis Gatton Park var., Lælia pumila Gatton Park var., and the very lovely Cattleya Mendelii Lady Colman. Blue types he considers as by no means rare, and the collection contains three quite distinct blue forms of Cattleya Bowringiana, differing from each other in size, colour, and shape.

Of hybrids raised in the collection, and coming true to colour, mention is made of Cattleya Portia cœrulea (Bowringiana violacea × labiata cœrulea), C. Ariel cœrulea (Bowringiana lilacina × Gaskelliana cœrulescens), and C. Alcimeda cœrulea (labiata cœrulea × Gaskelliana cœrulescens), with the usual variation in shape and size, but little variation in colour. When crossed with other coloured varieties the blues lose their individuality in colour. What may result from crossing blues with yellows and whites has not yet been satisfactorily proved, though one would not be sanguine of avoiding a muddy colour.

As to their popularity, Sir Jeremiah remarks :—"To attempt to arouse among the confraternity of Orchid experts appreciative enthusiasm of these would be a hopeless task. . . These so-called Blue Orchids are not in fashion. The expert fixes a standard, which includes size, substance, and with the exception of the albino, strong, striking or gorgeous colourings—just the qualities that the blues lack. Nevertheless . . . their flowers are unique and delicate, and they produce most beautiful effects in floral decorations. One of my Orchid houses, in which were arranged numerous flowering varieties of the type last November, proved a revelation to some of my Orchid friends. Still, I am under no misconception as to the Orchid world's estimate of these cœrulean types, and when Orchid groups have to be submitted to the judgment of the expert it is prudent to leave one's Blue

Orchids in lone glory at home. But they have their friends and admirers amongst lovers of flowers, if not among lovers of Orchids, as I have proved by the test of an occasional group at Vincent Square. However, let no one introduce Blue Orchids into their garden in the fond hope that they will bring fame and fortune. Their very name invites disappointment. . . . They must be numbered among the many beauties in nature which are lovable for their modesty; subdued and delicate in colour, and graceful in pose; they are essentially flowers for those of æsthetic and refined tastes, who find joy and rest in the contemplation of the unobtrusive."

In a later note, Sir Jeremiah alludes to Acacallis cyanea, which Mr. R. Windsor Richards, Usk Priory, Mon., informs him that he saw in a garden at Rio in 1914, and which was very nearly pure blue in tone and of great beauty.

Blue Disas are the subject of a note by Mr. Watson, who remarks: "When I was at Cape Town, in 1887, I heard much about the Blue Disas of Table Mountain, and I planned an excursion to see them growing there, but this had to be abandoned, as during the few days at my disposal the 'table cloth,' a dense white fog which spreads over the top of the mountain when the wind is in a certain direction, made the climb too hazardous. I had the pleasure, however, of seeing the Disas and other beautiful flowers which had been gathered by flower-sellers, who hawked them about in Cape Town, and I purchased several bunches of them, which afterwards adorned the table of the saloon of the steamer in which I returned to England. That was in February, when most of these flowers are at their best on the mountain. Disa graminifolia, also called Herschelia cœlestis, was the pick of the lot, and if a bunch of its flowers, such as I possessed, could be shown in London, blue Disas would be in demand."

In connection with the possibility of raising a blue Vanda we would ask if the cross between V. cœrulea and V. cœrulescens has been tried. The original type of the latter is equally blue, and of a darker shade. The flowers are smaller, but the two are nearly allied and would probably unite.

Acacallis cyanea, Lindl., is certainly a very charming Orchid, recalling Vanda cœrulea to some extent in delicacy of colour. Its general character may be seen at t. 374 of the *Orchid Album*, where it is figured under the name of Aganisia cœrulea, Rchb. f. The *Botanical Magazine* figure, t. 8678, represents a paler form; one would hardly call it blue. Unfortunately, it is difficult to cultivate in England.

Among the Blue Disas there are some that thoroughly deserve the title. Bolus classifies the Orchids of the Cape Peninsula with regard to colour, and enumerates 14 as having blue or blue-purple flowers. Of Disa

graminifolia he remarks: "The sepals are an intensely bright and beautiful blue. . . . It is one of the commonest species within our limits, has a rather long flowering period, and attracts universal attention by its beauty and brilliancy; so much so that Lindley, in dedicating it to the great astronomer, Herschel (who also was a great Orchid-lover and cultivator), felicitously speaks of it as species hæc pulcherrima *eclore cæli australis* intense cœrulco superbiens." . . . It does not appear to have been successfully grown in England. Lindley called the plant Herschelia cœlestis, and although Bolus reduces Herschelia to a section of Disa we have shown grounds for its retention, and the genus is kept distinct in the *Flora Capensis*. It contains twelve South African species, with three others

Fig. 1. DISA LONGICORNU (blue—half nat. size).

on the mountain further north, namely H. hamatopetala, Rolfe (Disa, Rendle D. Goetzeana, Rolfe (Disa, Kranzl.), and D. longilabris, Rolfe (Disa, Schlechter). They are characterised by having the lip crenulate, fringed or with a long basal claw, and by the wiry leaves. The flowers are mostly blue or purple, but in H. barbata they are nearly white. H. venusta has been in cultivation, and is figured at t. 7066 of the *Botanical Magazine*, under the name of Disa lacera var. multifida, from a plant brought from the Cape by Mr. Watson, which flowered at Kew in November, 1888. It also bloomed in the collections of Mr. Tautz at Hammersmith, and Dr. Smee at Carshalton, but in each case was quickly lost. In this case the flowers may be described as purple-blue. And there are genuine Disas with blue flowers, for example D. longicornu, and D. maculata.

And there are other blue Orchids in the southern hemisphere, among the Australian, Thelymitra and Caladenia particularly. Fitzgerald, for example, figures no fewer than eleven Thelymitras to which alone the term blue can be applied, and if any hybridist can raise among tropical Orchids a blue of the brightness and purity of colour of Thelymitra crinita, Caladenia gemmata or C. cœrulea, there will be no need to apologise for its presence in his collection or to exercise a little imagination when attempting to describe the colour. Australia is surely the headquarters of blue Orchids, and as we have readers there who are quite familiar with them we hope they will oblige with a few notes.

R.A.R.

CALENDAR OF OPERATIONS FOR JAN.-FEB.

By J. T. BARKER, Orchid grower to His Grace the Duke of Marlborough, Blenheim Palace, Woodstock, Oxon.

NOW that the great struggle of nations has ended, we as cultivators have, in many cases, to bring our collections back to pre-war excellence, for the difficulties that everyone has had to contend with made ravages among the plants. Although the strife is over, things are still far from normal; but we can now look forward with confidence, knowing that in the near future we shall have the satisfaction of seeing our plants well cared for, and regaining their old vigour.

TEMPERATURES.—The most suitable temperatures for the different departments are as follows:—

Cool house: Day 50° to 55°, with sun 60°; night 50°.
Intermediate house: Day 60° to 65°, with sun 60°; night 57° to 60°.
Cattleya and Mexican house: Day 60° to 65°, with sun 68°; night 58°.
Stove or East Indian house: Day 65° to 70°, with sun 75°; night 65°.

At this season it is well for the inmates of the houses if quiet temperatures are kept, as should any effort be made to push the plants into growth, a check may be given them during a spell of cold weather. Plants will not suffer from the temperatures running down a few degrees during severe weather, providing that the atmosphere and the plants are in a dry state. Another important point is that the lowest temperatures in the houses during the twenty-four hours should be in the early morning, with a gradual rise till mid-day, and then a gradual fall till the night temperatures are reached. A rise of 5° between the morning and mid-day temperatures will be ample, but with the influence of sun heat a further increase will be beneficial.

ATMOSPHERE.—Owing to the amount of fire-heat necessary at this season, it is quite easy for any house to acquire a stuffy condition, unless fresh air is given daily. Where a good system of bottom ventilation is in

existence this is easily managed, as the air passing over the hot water pipes becomes warm before coming in contact with the plants. If bottom ventilation does not exist, some trouble will have to be taken to recharge the houses without causing draughts, which are most detrimental to all forms of plant culture under glass. There was a time when growers were afraid to admit air to their plants, with results which at the present day are well known. There are not many days in the year when it is not possible to have the bottom ventilators open, if only for an hour or two, in spite of the restrictions on fuel consumption. During boisterous weather they may remain closed, as then sufficient fresh air finds its way into most structures. A dry stuffy atmosphere must also be counteracted by judicious damping of the floors, &c., thus providing a proper amount of moisture. Some houses are naturally drier than others, and will need damping more frequently; again, some situations are more humid than others, hence the necessity of careful observation in this respect. A genial atmosphere must be maintained at all times, by a proper balance being kept between heat and moisture, and there are few things Orchids resent more than over-heated pipes and a parched atmosphere.

WATERING.—Water must now be applied to the compost with great discretion, as it is much easier to get a plant too wet than to get it dry again. It is impossible to define the amount of moisture each individual plant should receive, but a safe course to pursue is as follows: All growing plants should have water applied to them whenever they become dry, whilst those at rest should on no account be allowed to shrivel. The effect of excess in either direction is injurious, as both mean the loss of roots and vitality.

CATTLEYAS AND ALLIES.—Such plants as produce flowers at this early season should receive all the light possible. Rather more water than they have been receiving since the completion of growth is essential to develop their flowers, reducing the supply again directly the latter are removed, and continuing this course until new growths or roots are observed to be pushing. This treatment also applies to any of the hybrids that may now be developing flowers. Vigorous, well-ripened plants should not be allowed to suffer for want of water at this season, but should be kept plump and healthy. On the other hand, too much water, either at the roots or in the atmosphere, is detrimental, and may cause black spot to develop, especially during spells of cold weather.

DENDROBIUMS.—The flower buds on many of the deciduous and semi-deciduous varieties are now pushing, and more water at the roots will be required than they have received since the past season's growth was developed, but even now the plants should be allowed to become dry before giving water. When the outside temperature does not fall below 40°,

maintain a minimum temperature of about 65°, but during colder weather the temperature may be allowed to run down to 60° without harm accruing. Any check given to these plants during the development of the flowers, either from too much or too little water, or from too low a temperature, will reduce the size of the flowers to a considerable extent. When the flowering season is past, they should be kept quiet until the new growths get well away, when the necessary repotting may be undertaken.

SPATHOGLOTTIS.—These Warm house Orchids are not represented in our collections as much as their merits deserve, as they are of easy cultivation, and produce their useful blooms since early autumn. These plants delight in a humid position, well up to the light, and with the exception of S. Fortunei, which is deciduous, should receive water at the roots whenever they become dry. S. Fortunei requires a thorough rest after its flowering season is over, which should be maintained until the young growths show signs of activity in the spring. It should be rested where it has been grown, and not placed in a cooler house. A suitable compost for all of them is two parts good fibrous loam, and one part peat, leaf soil and sphagnum moss, these being well mixed together, with a liberal sprinkling of coarse sand and small crocks. Ordinary pots are the best receptacles, which should be crocked in the usual way. Potting should be done when the young growths have got nicely away and are about to push new roots. The plants should be potted moderately firmly, and, being vigorous growers, they should have new material each year. When pushing up their flower spikes they will benefit by an occasional watering with weak liquid manure.

LÆLIA ANCEPS.—For producing flowers during the winter, the varieties of this beautiful plant take a prominent place. The white varieties are specially valuable in what is probably the dullest season of the Orchid year. When their flowering period is over, they should be allowed to rest, and when new roots are observed to be pushing from the rhizome, any necessary new rooting material should be given. It is not desirable to repot the whole stock in the same season, unless the plants are in bad condition, as in many cases it takes the plants one season to recover thoroughly after being disturbed. In repotting large specimens it is advisable to take them carefully to pieces, cutting them up to two or three bulbs. The back bulbs may be potted separately, or remain with the leading ones, as they will all break, unless very old, or the rhizome has been buried, and the eyes decayed. Pure osmunda fibre, when it is to be obtained, cut up, thoroughly pulled to pieces, and mixed with a small quantity of sphagnum moss, makes a suitable compost. Newly-potted plants will not require much water for some time, providing the material is in the proper condition when used, namely, neither wet nor dry. The white varieties, especially, should be induced to rest as long as possible, as they then break away more freely, and produce flowers

more abundantly. They flower later than the coloured kinds, and also grow somewhat later, so that they will require attention after the coloured forms.

CYPRIPEDIUMS.—During the present month a commencement may be made with the repotting of plants that flowered in the autumn. The pots should be well drained, and the plants potted moderately firmly, using a compost of two parts best fibrous peat, one part AI and loam fibre, and a liberal admixture of sphagnum moss. If the loam is not of a fibrous nature, a liberal mixture of broken crocks will be beneficial. The later-flowering varieties, which are in full bloom or pushing up their spikes, will follow on at a later date, and must have water whenever they become dry. In potting the tessellated-leaved section, the loam fibre is best left out, as this section I find succeeds better without it. This is less essential in hybrids between the two sections.

DECIDUOUS CALANTHES.—These useful Orchids, as they pass out of flower, should be placed in a safe position to rest, avoiding too low a temperature or a place where drip or water from any source may reach them. Repotting will not be required for some time.

ODONTOGLOSSUMS that are showing for flower should be carefully and neatly staked as the spikes attain sufficient length. Such plants are best placed in a position by themselves, so that they can easily be examined from time to time for slugs, which devour the spikes and do irreparable harm. Small, weakly plants should have their spikes removed as soon as they show, as these should not be allowed to produce flowers until they get fairly strong, and then only be allowed to produce one or two flowers. The usual precautions against attacks of thrip and other pests must have continual attention. Plants which are in need of new material, and whose new growths have attained some few inches in length, may be repotted. A suitable compost consists of equal portions of peat, AI fibre, sphagnum moss, and clean broken leaves.

MILTONIAS.—The autumn-flowering Miltonias will soon need attention. The young roots are emitted soon after the new growth gets away, and when these are visible any necessary repotting should be done. A suitable compost consists of two parts peat, two parts sphagnum moss, and one part leaf soil, mixed with some small broken crocks. The spring and summer-flowering varieties are now growing strongly in the Intermediate house, and should have water afforded them whenever they become dry. Whilst in full growth these plants should not be allowed to suffer for want of water at the roots, and their surroundings should be fairly moist, as a preventive against thrip, their arch enemy, especially when much artificial heat has to be used to maintain the temperatures.

SOPHRONITIS GRANDIFLORA.—This delightful Orchid is now in bloom in

the Cool house, and will remain so for a considerable time. After the flowers have faded, and the bulbs are fully matured, much less water at the roots will suffice, but even then they must have sufficient to keep the plants plump and healthy. This species suffers if kept either too wet or too dry. Repotting is best undertaken when the plants are seen to be pushing roots from the half-made pseudobulbs, and the best position for them is at the warmest end of the Cool house, with all the light possible, and a free circulation of fresh air.

MASDEVALLIAS.—Many of the smaller of these interesting Orchids, such as M. tovarensis, M. Schrœderiana, and others of like nature, will now be in need of new rooting material, and the present season is the best possible time to undertake this operation. They should be repotted just as they commence to grow, not too firmly, as their roots are not capable of pushing through hard masses of material. They are best grown at the warm end of the Cool house, suspended well up to the light, all the year round. A suitable compost is made up of equal parts of peat, osmunda fibre, and sphagnum moss.

CYMBIDIUMS that have passed out of bloom may have any necessary potting done, as soon as their young growths are sufficiently advanced, using a compost of two parts good fibrous loam, one part peat fibre, some broken leaves, and sphagnum moss, with sufficient broken crocks to ensure the porosity of the compost. This should be used in a rough state, as the fleshy roots of these plants detest too fine a compost. The roots of all Orchids are a good guide to cultivators in this respect, as those of a fine nature delight in a compost of a closer texture than the more succulent kinds. Afford a thorough drainage of crocks, as when thoroughly well-rooted they require liberal supplies of water at the roots. These useful plants delight in a cool position in the Intermediate house, or the warm end of the Cool house. Red Spider sometimes attacks the leaves if the position is at all dry, so that every precaution must be taken against this troublesome pest. Plants that are now pushing up their flower spikes may have attention at a later date. After repotting, watering must be done very carefully. With plants so free and easy to cultivate as these, one may sometimes think that such care is not necessary, but if the highest point of culture is to be reached, it is only attained by persistent attention and pains. In successful Orchid growing the great things to remember are, firstly, doing the right thing at the right time, and, secondly, to keep the plants and their surroundings scrupulously clean.

SOBRALIAS.—Opportunity should now be taken to remove all useless stems, cutting them down to the roots, thus making more room for the new growths to develop. They have already made considerable progress, and should be tied out at equal distances apart, so that light and air may pass

freely between them. All strong, well-rooted Sobralias will need copious waterings for some time to come.

SHADING.—Towards the end of February it will be advisable to place the shading in position and in proper working order. It is at this season, when the plants have passed through the dull sunless days of winter, that thin-leaved Orchids easily scorch if the sun is allowed to shine upon them directly, hence the necessity of having the blinds in readiness should bright weather prevail. Too much shading is harmful, and the growth will be finer, more solid, and better developed in every way when grown under proper conditions of light, which consolidates the growth as made. In extreme cases it may be advisable to paint the glass of the houses with summer cloud or similar mixtures, but I do not recommend them unless the season is a very hot one. Permanent shading on the glass is harmful, and in any case will not be necessary for some little time. Roller blinds are indispensable in Orchid culture if the best results are to be attained.

GENERAL REMARKS.—Every precaution should be taken against fluctuations of temperature in the houses, as these, if drastic, may do much harm, and usually the present period is one of a most changeable nature. The cleaning of the houses and plants should also have every attention. This is a most essential point, although owing to want of staff it has had to be neglected to some extent in many cases, but we may hope soon to have some of the men home again, so that arrears of work can be cleared off. Stocks of potting materials should be prepared, so that when the busy season arrives there is no delay. A well arranged plan is a great help in getting through the necessary work during the busy season.

I must congratulate our Editor upon another excellent year's work, carried on under exceptional difficulties. It has required no little effort to keep the work up to its high standard during these strenuous times. May the *Review* extend its influence during the coming years of peace, and may it grow and prosper as its merits deserve.

AN ORCHID FUNGUS.—A parasitic fungus has been found on the leaves of Ornithidium coccineum in the Kew collection which has been identified by Miss E. M. Wakefield as Hemileia Oncidii, Griff and Maubl. This fungus was described and figured in 1909 (*Bull. Trimestr. Soc. Mycol. France*, XXV. p. 138, t. 6), from materials obtained in the Orchid collections near Paris, being found upon the leaves of Oncidium Marshallianum, crispum, and varicosum. It is said to be allied to H. americana, Massee, found upon Cattleya Dowiana, but to be readily distinguished by having much smaller spores. The malady is not considered serious by growers, being easily checked by sponging with soap and tobacco water. It takes the form of bright yellow patches on the under surface of the leaves, with a

brown centre. Its presence on Ornithidium does not appear to have been recorded, but the general character is so similar to Oncidium that there is nothing improbable in it, and as the plant affected has been long in the collection it is practically certain that it has spread from something else. The history of the fungus suggests Brazil as its place of origin.—R. A. ROLFE.

HEMILEIA AMERICANA, MASSEE.—The above note raises the question of the identity of the host plant of Hemileia americana, Massee, whose history has previously been summarised (*O.R.*, xiii. p. 267). It was originally recorded by Mr. Massee as Oncidium Cavendishianum, but in a later article on the genus Hemileia it is recorded as Cattleya Dowiana (*Kew Bull.*, 1916, p. 40, with plate, fig. 7-11), no mention being made of the Oncidium. Curiously enough, it is a Cattleya leaf that is shown in the original article, and which is preserved in the Herbarium, while the fungus shown seems identical with the later figure. It thus remains to ascertain the identity of the parasite fungus which affects Oncidium Cavendishianum, and whether the two fungi are really distinct. H. Oncidii was then unknown, and when more material is forthcoming it may be possible to see how far the smaller spores are a reliable differential character. We shall be much obliged if anyone who finds a fungus upon this or any other Oncidium will forward examples, which may serve to clear up the doubtful point. It is not a very destructive pest.—R.A.R.

CYPRIPEDIUM TOM WORSLEY.—A flower of this beautiful hybrid, which is descended from C. Helen II. and Actæus langleyense, is sent from the collection of Tom Worsley, Esq., Carter Place, Haslingden, by Mr. T. Wood, who remarks that it is a lovely thing and quite unique. He adds that they have now quite a batch of it in bloom, giving a distintive feature to the house. The shape is excellent, and the ground colour of the broad petals and lip light yellow, the former having a light brown central line and several rows of small dots, mostly on the upper halves. The dorsal sepal is slightly concave, white, with a light greenish yellow base, and numerous small blotches and spots in the centre, those which extend into the white area being light purple in colour. The flower bears a strong general appearance to C. insigne, which species, or its yellow variety Sanderæ, was concerned in each of the crosses concerned in its descent. It is the var. Sanderæ that has given the yellow colour. The broader petals and neat lip reflect the influence of C. bellatulum, while the resemblance to C. Leeanum is due to the influence of C. Spicerianum. It is certainly a charming thing, and received a First-class Certificate from the Manchester Orchid Society in March, 1916.

SOPHROCATTLEYA BLACKII.

THE handsome hybrid which is here figured was raised in the collection of R. G. Thwaites, Esq., of Streatham, from Sophronitis grandiflora crossed with the pollen of Cattleya Hardyana. It was dedicated to Mr. J. M. Black, who had long had charge of the collection, and received an Award of Merit from the R.H.S. in August, 1909. It has retained much of the Sophronitis character, both in shape and colour, the flower, however, being

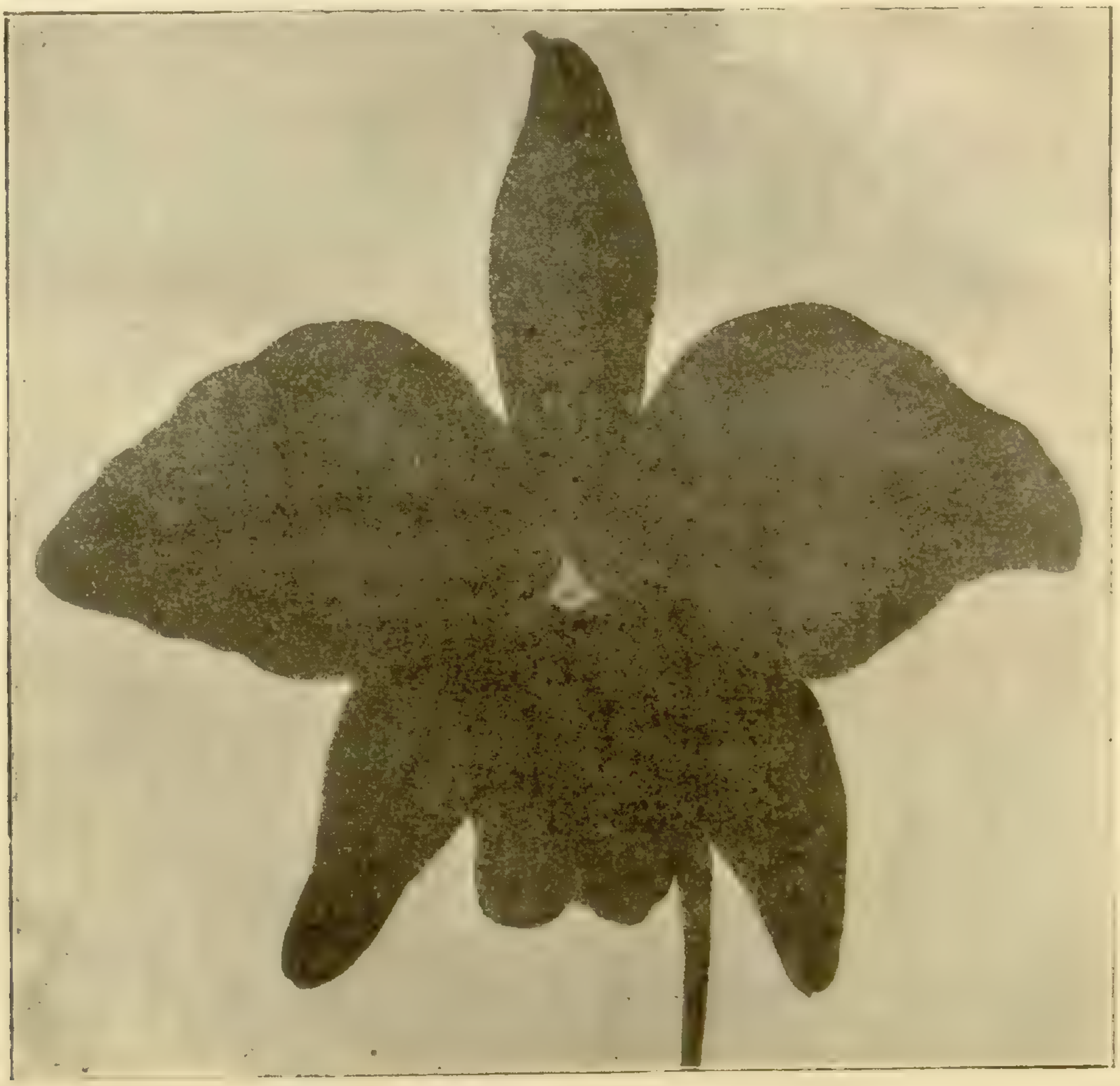

Fig. 2. SOPHROCATTLEYA BLACKII.

considerably enlarged. The sepals and petals may be described as rich cardinal red, and the lip is darker, with some yellow lines in the throat, the latter not well shown in the figure owing to the well-known fact that this colour does not come out well in a photograph. This hybrid was afterwards crossed by Mr. Thwaites with the pollen of Brassocattleya Leemaniae, resulting in a promising trigeneric hybrid which has now flowered, and to which Mr. Thwaites has given the name of Rolfeara rubescens (see p. 3). Other developments are, we believe, in progress.

POTTING FIBRE FOR ORCHIDS.

THE difficulty of obtaining suitable potting fibres for Orchids during the war has led to the use of various substitutes, which, judging from letters received, have not always proved satisfactory, and a question has arisen as to what some of them are. Some time ago we received a sample of the fibre known as A1, with an enquiry as to its origin, and so far as we could make out it was the roots of what is known as the male fern, Lastrea (or Nephrodium) Filix mas. A sample from another source was not identical, and appeared to be a mixture, while one now received appears again to be Lastrea. The present scarcity of potting fibre may partly account for this want of uniformity, and it invites a discussion as to potting fibres in general.

The basis of the old compost for epiphytic Orchids was what is commonly known as good fibrous peat, and the best Orchid peat we believe consists chiefly of bracken root (Pteris aquilina), this being chopped or pulled to pieces, so as to exclude the finer particles of soil which adhere to the roots and render it too close or too retentive of moisture. Then polypodium fibre, the roots of Polypodium vulgare, came into use, and is still much appreciated for certain Orchids, and this was followed by osmunda fibre, the roots of one or more North American species of Osmunda, probably unsurpassed for the Cattleya group—when obtainable, and the sources of supply may soon be open again. Lastly came into use what is known as A1 fibre, which was by some considered to be a proprietary article, though we are told that such is not the case.

It thus appears that the basis of the compost used for epiphytic Orchids is some kind of fern fibre, and we have been told that it matters little what it is so long as it is clean and porous, and not liable to become water-logged or sour. Other substitutes have been tried, among the most recent of which is sponge trimmings, which Mr. Watson now admits has not proved the success that he anticipated, as, with the exception of Cypripediums, which, he remarks, appear to revel in sponge, the roots do not like it." And, he adds, "there can be little doubt that a mixture of air and water is all the nourishment epiphytic Orchids naturally get." We are not so sure of this. Has he ever tried growing them in asbestos fibre and using only distilled water? We should much like to see such an experiment carried out, though we have no doubt whatever about the result.

The roots of a plant—and epiphytic Orchids form no exception—serve the double purpose of anchoring it to the matrix on which it grows and of absorbing water containing nutrient matters in solution for its support. Pure or distilled water is useless unless it can obtain the necessary nutrient matters from the compost. Herein lies the use of a compost. By its

gradual decay it gives up the necessary food substances, until exhausted or until it becomes sour or sodden so that the roots perish, and can no longer carry on their proper functions. The water may, and often does, contain the necessary nutrient matters in a state of solution, hence the virtue of rain water, or of such additions to the water used as that known as the "Cookson formula." The use of manure for Orchids has been recommended, but as often deprecated because of its injurious effect upon the roots. Mr. Burberry always strongly deprecated the use of manures, but even he advised the addition of a spadeful of something to the tank if the water was not right: and that spadeful of something is what all Orchid growers who are not satisfied with their results are in search of.

Both the mechanical and nutrient qualities of the compost need consideration, hence the importance of the substances that are added to the fibre; also of efficient drainage. Crocks and sand are used to keep the compost open, and sphagnum moss, while partly serving a similar purpose, is very retentive of moisture. Leaf mould, dried cow manure, and loam, when added, are nutrient matters, and must be added in such a way as not to affect detrimentally the mechanical properties of the compost. The addition of loam or leaf mould, or both, is important in the case of many terrestrial Orchids, because it is their natural medium.

Orchids generally may be regarded as humus lovers, and in the case of epiphytes its presence in the necessary quantity and condition is all that is essential, due regard being paid to the water supply in accordance with the nature of the plant, its stage of growth, and the season of the year. Many of the popular Orchids in cultivation may be described as pseudo-epiphytes, that is to say they grow in accumulations of humus on the branches of the trees, and thus are best grown in pots. Others have true aërial roots, which in a state of nature wander along and round the branches, adhering tightly to the bark. In both cases the twigs and branches of the trees may be regarded as the collecting ground of the water which is continually trickling past the roots, which are thus able to obtain the necessary food supply from the various salts held in solution. They have become adapted to their surroundings; they grow during the wet season, and rest during the dry—when there is one, for a number of species grow where the seasons are fairly equable, and these can scarcely be said to have a distinct season of rest. Such Orchids probably suffer most during our long dull winters, and this is probably the cause of a number of desirable Orchids being considered intractable subjects. True epiphytes are easily recognised by their fleshy, aërial roots, covered with a white outer layer, from which protrudes a green point when the roots are growing actively. In such cases the provision of a suitable atmosphere is especially important, because so many of the roots are outside the compost.

These considerations may help in the culture of certain difficult subjects, for the roots are the organs by which the plants take up their food supply, and their relation to the compost and its mechanical and nutrient qualities are of the highest importance in successful Orchid culture. They explain to some extent why certain Orchids can be successfully grown in apparently quite different composts, which may none the less agree in having correct mechanical and nutrient quaiities. For the same reason it explains another remark which has often been made, that the matter of compost is less important in Orchid culture than is the provision of a suitable climate and suitable atmospheric conditions.

GRAPHIC HISTORIES.—2.

AS an example of a subject where the historical side of the question has been largely lost sight of in practice, the hybrid between Odontoglossum nobile (afterwards called O. Pescatorei) and O. crispum is suitable for the second of our Graphic Histories. Others of a more general character have been suggested, in which the materials are abundant but more difficult to arrange, and these will not be lost sight of. At present, however, we will take Odontoglossum armainvillierense.

1898.—Odontoglossum armainvillierense appeared in the collection of Baron Edmond de Rothschild, Armainvilliers, as a new hybrid, it having been raised by M. Jacob by crossing O. Pescatorei with a blotched form of O. crispum. It was exhibited at a meeting of the Société Nationale d'Horticulture de France on November 22nd, 1898, and received a First-class Certificate, with felicitations. It was described as a superb plant, with flowers of perfect shape, and very dark blotches.—*Journ. Soc. Nat. Hort. Fr.*, 1898, p. 1240.

1902.—Four Odontoglossums exhibited by M. Ch. Vuylsteke at the Temple Show in May, 1902, without record of origin, under the names of O. ardentissimum, O. concinnum, O. dulce, and O. venificum. The first gained a First-class Certificate, the three others Awards of Merit, the names, however, being changed to O. crispum ardentissimum, O. c. concinnum, O. c. dulce, and O. c. venificum.—G.C., 1902, May 31, Suppl. p. 2.

We examined the four seedlings at the Show, and found unmistakable evidence of their origin, and we remarked : "The parentage of these four hybrids was not recorded, but they seemed to combine the characters of O. Pescatorei and heavily spotted forms of O. crispum."—*O.R.*, x. p. 175.

A letter to this effect to M. Vuylsteke (whom we missed after examining the plants) elicited the reply : "O. ardentissimum is a hybrid between an extra-fine, heavily reddish spotted O. crispum and an extra-fine O. Pescatorei

with large mauve spots, very likely the finest form except Veitchianum. O. dulce, concinnum, and venificum are from the same hybridisation. I have a great many plants in flower, but they are mostly whites, the finely spotted forms are very limited." This confirmed the identity with O. armainvillierense, to which we reduced the four as varieties, giving an illustration of var. ardentissimum, from a photograph.—*O.R.*, x. pp. 209, 210, fig. 22.

This record was followed by a figure of a single flower, and a note that the Orchid Committee had adopted O. ardentissimum as the primary name of the set, and to include all others of the set under it.—*G.C.*, 1902, ii. p. 50, fig. 19.

Now arose the question whether O. armainvillierense had at any time appeared as a wild plant, and we may summarise the evidence.

1899.—A record that "a little group staged at Manchester, by Messrs. Charlesworth, contained O. crispum, triumphans, harvengtense, and what I take to be a form of O. Pescatorei, and these are said to have come together tied to sticks in the usual way they are imported. But does this necessarily prove that they grew, and were collected, together?"—Rolfe in *O.R.*, vii. p. 167.

1906.—M. Fl. Claes wrote: "I think it may interest readers of the *Orchid Review* to know that early this spring I flowered among a batch of semi-established O. crispum, a good form of O. Pescatorei. I must add that I never collected or received importations of O. Pescatorei, and consequently it could not get mixed in by chance. I suppose it is the first time that this species has been found among O. crispum."—*O.R.*, xiv. p. 167.

1907.—Mr. J. M. Black cites M. Louis Forget as saying that "O. crispum extends from the Savannah plains northwards right to Simatoea (I have been unable to find this name on any map), where a few O. Pescatorei have already been found mixed with crispum."—*O.R.*, xv. p. 326.

1907.—Mr. J. Birchenall, who had been collecting in the Velez district for about ten years, including a few years for Messrs. Charlesworth, wrote: "The village that Mr. Black was unable to find on the map will probably be Simacota. Here O. nobile or Pescatorei grows, but I am not aware that O. crispum reaches this place."—*O.R.*, xv. p. 372.

Thus the evidence is not quite conclusive, though it seems probable that at Simacota the areas of the two species practically meet, if not actually overlap. In the main the areas are distinct, and it is significant that the Lehmann Herbarium, while containing so many O. crispum, has not a single piece of O. Pescatorei, which apparently Lehmann never collected. We have no doubt that Mr. Birchenall is right about Simacota. We find it on a large map of Bogota, a little west of Socorro, some 25 miles N.N.E of Velez, and on the other side of the valley up which the railway runs. It seems possible that O. armainvillierense may occur there, though not in the

highly blotched forms known in gardens. Has anyone ever crossed the normal forms of the two species together? The result should be a white of intermediate shape, recalling M. Vuylsteke's white reversions, which we afterwards saw.—*O.R.*, xi. p. 188. R.A.R.

ORCHIDS IN BELGIUM.

FOR over four years we have been cut off from all knowledge of what has been happening to Orchids in Belgium, but at p. 228 of our last issue we were able to give a few particulars, and now further details are available.

M. Charles Sladden, Bois de Breux, near Liégè, writes: "Since the outbreak of War I have been deprived of the *Orchid Review*, but now that communications are again open I beg you to send me as early as possible all the missing numbers, so that my set shall not be broken. If I were to tell you all the iniquities, vexations, and cruelties we had to bear in silence, a whole book would not be sufficient. Revelling in this devilish enjoyment, the Germans burnt many houses in my own village, and shot some of the inhabitants. Still, I had the marvellous luck to remain unhurt. My establishment escaped destruction and I death; two things very likely to happen, as being near the forts of Liège our risks were great in the early days of the War. But I had the good fortune to keep my plants in a healthy and thriving condition, though at great sacrifices, for the cost of coal and all raw materials was enormous. Peace has now relieved us of that awful nightmare, and I hope to be able to again read in the *Orchid Review* all about my beloved Orchids, and the progress made in their culture during the 4½ years that we were excluded from the world.

M. Ch. Vuylsteke, Loochristy, writes, thanking us for still taking a kindly interest in his Orchids. He remarks: "Naturally, during this four years we have suffered much by the terrible and barbarous War, and we have undergone great losses. We have had very great difficulty and expense in keeping the plants alive, and in spite of all our trouble we have lost several thousand plants, because we had not fuel enough. Owing to the coal shortage we have burnt nearly two hundred large trees, and part of the houses have been warmed by electricity. Fortunately, we have been able to save the greatest part of the finest varieties of Odontoglossum, Odontioda, and Miltonia, and these are in good condition."

M. Th. Pauwels, Meirelbeke, Ghent, replies that the news of the destruction of his nursery is unfortunately true, and the result of 25 years' work was destroyed only a few hours before the signature of the armistice. "Notwithstanding all the difficulties in procuring fuel, compost, and insecticide, the plants had been kept in good condition for over four years. There were

more than 60,000 Cattleya, Brassocattleya, Lælia, Cypripedium, Odontoglossum, and Cymbidium seedlings that had nearly reached the flowering stage, and I expected to have a good many fine things to show after the war.

"The situation—about 500 yards from the important railway system of Meirelbeke Station—was a very dangerous one, as the enemy in 1915 established there an enormous ammunition depot and artillery park, and a little to the southward an aerodrome for Zeppelins and aeroplanes. From that moment there were constant visits by allied airmen, but the damage to the nursery was not great, except a few hundred panes of glass broken, which were constantly replaced. On October 15th a fearful bombardment began, and for 24 hours there was a rain of iron all over the place, and an enormous train of ammunition was blown up. On the 30th there was another bombardment, and one bomb fell on a Cattleya house, and another about two yards from the entrance of my house, where I stood. Fortunately, neither of them exploded. At this time the Germans had commenced the destruction of the railway system, and more than 800 kilometres of railway were blown up, several pieces of iron more than two yards long being thrown into the establishment and garden. Meantime a heavy German battery had taken position about 300 yards behind the nursery, keeping the Belgian position under constant fire. During the night of November 8th the Belgians replied, and in a few minutes half the nursery and part of my house were destroyed. Next day I removed my family to Ghent, and commenced the saving of the plants, but my men—all between 16 and 40—could not help, being obliged to hide themselves from the German requisition. That night and the following morning—a few hours before the end of the war—my nursery and house were again under heavy bombardment and were completely destroyed.

"Of my main establishment, composed of 3,000 square metres of glass, nothing remains. In an annexe, or second establishment, seven Cattleya houses were erected, four of which have been put out of service, and three, though much damaged, have been repaired, and contain all the plants that I have been able to save from the bombardment and frost. Had the weather been favourable, we could have saved more plants, but on the 11th we had to give up all hope, for all the plants were frozen."

We are sure that our readers will join us in sympathising with M. Pauwels in such an appalling catastrophe, and in congratulating him on his personal escape. M. Pauwels contemplates rebuilding, and hopes to welcome us again at the next Ghent Quinquennial Exhibition, which, he adds, will take place in 1921. Accounts of M. Pauwels' Establishment may be found in vols. xvi. pp. 161-163, and xxi. pp. 236-238.

Messrs. Sander et fils sent some additional information soon after their previous note. Mr. T. Maelstrom, manager of the Bruges' Establishment,

wrote that the nursery is not destroyed, but a lot of glass is broken, which they are busy repairing, taking glass from empty houses to repair the others. "Most of the glass," he remarks, "was broken on October 18th. Fortunately the weather has been, and still is, wonderfully mild, but it will take a fortnight to get all the houses done. The Orchids are in a pretty fair state. The Odontoglossums, Cypripediums, and Miltonias are best, the Cattleya seedlings not quite so good. There are good Odontoglossum and Cymbidium seedlings, and several houses of Cattleya seedlings. . . We have a certain amount of coal and coke, and if the coming winter is not too severe I shall manage to pull through till the spring. January and March, 1917, was the most severe winter I have ever known in Bruges. It was a terrible time, and put us to a severe test. . . The Orchids suffered that winter, and did not get any heat in the following summer, so they could not mature their pseudobulbs, and when last winter came, which was also very cold, and the coal of the poorest quality, a great number of the Cattleya seedlings died."

In a letter to the *Gardeners' Chronicle*, M. Louis Gentil, Curator of the Brussels Botanic Garden, gives some details of happenings in Belgium during the war. He says that the last month, November, was the most terrible of the whole war for destruction by bombardments. Thousands of glass houses were destroyed or rendered useless. On the last day of the German occupation of Ghent, M. Francois Spae's splendid nursery at Lille was destroyed, and the same thing happened to M. F. Pauwels' at Meirelbeke. Nearly all the glass was broken, and the Orchids were buried beneath the glass, with the temperature at 6° below zero. Orchid growers, he states, have thrown away all but their rare specimens, but M. Lambeau's collection is nearly all saved, and so is that of M. Peeters. The Brussels Botanical Garden has suffered greatly—seven houses had to be emptied for want of coal, and a lot of rare plants have been lost. The *Tribune Horticule* decided to hibernate during the war, but will be started again when circumstances permit. The monthly meetings will re-commence as soon as possible. Belgian horticulture has lost many prominent members—among others MM. Jules Hye de Crom, Edgar Wartel, the Orchid grower and one of the promotors of the Ghent Quinquennial Exhibitions. M. Joseph de Hemptinne was condemned to death by the Germans, but afterwards pardoned and sent to prison in Germany.

M. Ch. Maron, Brunoy, France, has come out of the war better than at one time seemed possible. There was an anxious time during which he had to shut off the heat from half the Orchid houses, and turn some of the larger specimens out of their pots. There have been some regrettable losses, but the greater part of the good hybrids have been saved. M. Maron's son has fortunately passed through his army duties in good heath.

BRASSOCATTLEYA LEEMANIÆ.

BRASSOCATTLEYA Leemaniæ is a handsome hybrid from Cattleya Dowiana aurea × Brassavola Digbyana, which was originally raised by M.Ch.Maron, Brunoy, France, and was exhibited at a meeting of the R.H.S. in April, 1902. The annexed photo is interesting as showing this original form though the flowers were then obviously not fully developed. Two years later a plant was exhibited by Sir Trevor Lawrence, and received an Award of Merit. It has since been raised in other collections, and some very fine forms are

Fig. 3. BRASSOCATTLEYA LEEMANIÆ.

now in existence. It most resembles the Cattleya parent in general character, and the flowers may be described as light primrose yellow, more or less marked with light rose on the petals, and with darker markings on the disc of the lip. Recrossed with C. Dowiana aurea it has produced the handsome hybrid Bc. Minerva, while with other Cattleyas and Læliocattleyas it has yielded a rather numerous progeny, some two dozen of which have already bloomed. Mr. R. G. Thwaites has now added Sophrocattleya to the list, as recorded at page 3, and the first of several promising crosses has just produced its first flower.

SOCIETIES.

ROYAL HORTICULTURAL.

THE last meeting of the year was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on December 3rd, when there was a fine display of Orchids, and the awards consisted of two First-class Certificates, two Awards of Merit, two Preliminary Commendations, and two medals, one of them a Gold Medal for a magnificent group staged by **Messrs. Armstrong and Brown.**

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), W. Bolton, W. H. White, R. A. Rolfe, C. J. Lucas, A. McBean, W. H. Hatcher, S. W. Flory, J. Charlesworth, E. R. Ashton, W. J. Kaye, T. Armstrong, F. K. Sander, F. J. Hanbury, Pantia Ralli, and **Sir Harry J. Veitch.**

FIRST-CLASS CERTIFICATES.

BRASSOCATTLEYA GATTON LILY (C. Trianæ albens × Bc. Maronii var. Fortuna).—A large and handsome thing, the sepals and exceptionally broad petals white, and the lip with some bright violet in front of the yellow disc. **Exhibited by Sir Jeremiah Colman, Bart.**

CYPRIPEDIUM JOHN HARTLEY (Reginald Young × Shogun).—A remarkably fine hybrid of the C. insigne Harefield Hall type, the dorsal sepal yellowish green below, blotched with purple-brown, and with the upper half white, and the broad petals and lip greenish yellow tinged with brown. Exhibited by John Hartley, Esq., The Knowle, Morley, Yorks.

AWARDS OF MERIT.

LÆLIOCATTLEYA LINDA BRYNDIR VAR. (Lc. Arachne × C. Dowiana aurea).—A handsome form, with bright salmon rose sepals and petals, and the lip ruby purple with bright yellow veining in the disc. Exhibited by Dr. Miguel Lacroze.

LÆLIOCATTLEYA MARSHAL FOCH (Lc. MYRRHA × C. Luegeæ)—A well-shaped and delicately-tinted flower, the sepals and petals pale chrome yellow tinged with rose, and the lip yellow with purple veining in front. Exhibited by Messrs. Charlesworth & Co.

PRELIMINARY COMMENDATIONS.

ODONTIODA MARSHAL FOCH (Charlesworthii × Vuylstekeæ).—A brilliant dark claret-purple flower, the lip freckled with rose at the apex, and with a dark red blotch in front of the yellow crest. Exhibited by Messrs. Armstrong and Brown.

ODONTOGLOSSUM ROSINA (eximim × Lady Pirrie).—A promising hybrid, the sepals and petals rich claret colour margined with white, and the lip

dark purple behind and white in front, with a bright yellow crest. Exhibited by Messrs. Charlesworth & Co.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), showed Cœlogyne gattonensis (speciosa × Sanderæ), and Cattleya Festus (Dormaniana × Adula), an interesting hybrid most resembling the former.

F. J. Hanbury, Esq., Brockhurst, East Grinstead, exhibited a flower of Dendrobium Hanburyi (pulchellum × fimbriatum oculatum), orange-yellow with a large claret blotch on the lip.

Dr. Miguel Lacroze, Bryndir, Roehampton (gr. Miss Robertson), sent two pretty varieties of Læliocattleya Linda, called illuminata and aurifera, the latter having yellow sepals and petals.

Messrs. Armstrong & Brown, Tunbridge Wells, received a Gold Medal for a magnificent group of about 250 plants, occupying one side of the long stage, and containing numerous good Cattleyas, Læliocattleyas, Odontiodas, Odontoglossums, Cypripediums, and Cymbidiums, Oncidium varicosum, Lælia anceps, and others. Noteworthy examples were a fine Odontoglossum ardentillus with a spike of twelve flowers, Læliocattleya Wrigleyi, Cattleya Maggie Raphael var. Marshal Foch, with broad white sepals and petals, and a very richly-coloured lip, a very fine Brassocattleya Maronii var. M. Clemenceau, a richly-coloured hybrid from Odontoglossom Wilckeanum × Odontioda Charlesworthii, the brilliant Oncidium varicosum var. insigne, and others too numerous to mention.

Messrs. Charlesworth & Co., Hayward's Heath, received a Silver Flora Medal for a fine group, consisting largely of Odontoglossums and Odontiodas, noteworthy among them being Odontoglossum Prince Edward (spectabile × Rolfeæ), O. plumptonense (amabile × Lambeauianum), finely blotched with claret-red, a few brilliant Cattleyas, Læliocattleyas, and numerous other good things.

Messrs. Flory and Black, Slough, sent Brassocattleya Ruby (Bc. Leemaniæ × C. labiata Peetersii), having bright rose flowers with yellow veining on the lip, a good Bc. Nestor, Læliocattleya Lorna, and a few Cypripedium seedlings.

Messrs. Stuart Low & Co., Jarvisbrook, sent Sophrocattleya Doris, with three brilliant flowers, Cattleya Alcimeda alba, forms of C. Gaskelliana, and several other interesting things.

Messrs. J. & A. McBean, Cooksbridge, sent a few good Odontoglossums, including O. crispum xanthotes, and O. armainvillierense xanthotes, also Cymbidium Caroline (C. Doris × erythrostylum), and Læliocattleya Linda, a pretty hybrid from Lc. Arachne and C. Dowiana aurea.

At the meeting held on January 14th, there was an exceptionally fine display, including a magnificent Gold Medal group from Messrs. Charles-

worth & Co., and four other medal groups, while two Preliminary Commendations, and one Award of Merit were also given.

Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), W. Bolton, Walter Cobb, R. A. Rolfe, C. H. Curtis, C. J. Lucas, W. H. White, J. Cypher, J. E. Shill, J. Charlesworth, W. H. Hatcher, F. K. Sander, T. Armstrong, A. McBean, E. R. Ashton Pantia Ralli, F. J. Hanbury, R. Brooman White, R. G. Thwaites, J. Wilson Potter, Stuart H. Low, Sir Harry J. Veitch, and Arthur Dye.

AWARD OF MERIT.

CYPRIPEDIUM PERSEUS (Lady Dillon × Alcibiades illustre).—A very finely-shaped flower, having a broad white dorsal sepal, with lines of claret-red spots, brownish rose petals, with a darker central line, a brownish rose lip with a yellow margin, and the staminode yellow. Exhibited by W, R. Lee, Esq., Plumpton Hall, Heywood, Lanc. (gr. Mr. C. Branch).

PRELIMINARY COMMENDATIONS.

ODONTOGLOSSUM PRINCESS PATRICIA (Dora × crispum Luciani).—A very fine thing, the flower being large and of perfect shape, with a white ground colour, and the inner two-thirds of the segments heavily blotched with claret red, while the lip bore a large claret red blotch in front of the yellow crest. Exhibited by Messrs. Armstrong & Brown.

ODONTOGLOSSUM TRIUMPH (armainvillierense × Ossulstonii).—Another promising seedling, heavily blotched with claret-red on the lower two-thirds of the segments, the outer part being tinged with blush. Exhibited by Messrs. Armstrong & Brown.

GENERAL EXHIBITS.

E. R. Ashton, Esq., Broadlands, Tunbridge Wells, showed Sophrocatlælia Isabella (C. Fabia × Scl. Marathon), a pretty rose-purple flower with a darker purple lip.

G. W. Bird, Esq., Manor House, West Wickham (gr. Mr. Redden), showed Odontioda Sphinx, a richly-coloured hybrid of unrecorded parentage.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), sent the handsome Cœlogyne Mooreana, Calanthe Gatton Alpha, white with a pink lip, and Læliocattleya Brian (Goodyi × Colmaniana).

Baron Bruno Schröder, The Dell, Englefield Green (gr. Mr. J. E. Shill), sent cut spikes of Brassocattleya Cliftonii albens, and Læliocattleya Schrœderæ (bella alba × Maggie Raphael alba), a beautiful white with purple front to the lip.

Messrs. Charlesworth & Co., Hayward's Heath, received a Gold Medal for a magnificent group of about 125 plants, largely consisting ot choice Odontoglossums, Odontiodas, and Miltonias, with a large batch of the white Calanthe Harrisii in the centre. Among specially noteworthy plants were Odontioda Dulcies (Oda. Cooksoniæ × Odm. illustrissimum), O. Lyra

(Odm. Jasper × Oda. Royal Gem), O. Marjorie var. grandis, Odontoglossum Tityus (spectabile × President Poincaré), O. Gorizia var. purpureum, and numerous others, both among white and blotched varieties.

Messrs. Armstrong & Brown, Tunbridge Wells, received a Silver-gilt Flora Medal for a fine group, including many good Odontoglossums, Cattleyas, Læliocattleyas, Odontiodas, and Cymbidiums, particularly noteworthy being Odontoglossom Victory, O. Aglaon auriferum, a pretty variety with light yellow ground and numerous dark blotches, and Odontioda Madeline var. Princess Patricia, yellow with red blotches, and many other good things.

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver Flora Medal for a fine group, in which three plants of Sophrocattleya Doris, Sophrolælia Leda, a fine example of Brassocattleya Penelope, several good Læliocattleyas, and a few Odontoglossums and Odontiodas were prominent.

Messrs. J. & A. McBean, Cooksbridge, received a Silver Flora Medal for a good group, including Cymbidium Alexanderi, the fine C. Schlegelii giganteum, and other Cymbidiums, the handsome Odontoglossom Princess Mary, and several others.

Messrs. Flory & Black, Slough, showed a small group of Odontoglossums, with three plants of Cattleya Douai, Sophrocatlælia Ruth, and others.

Messrs. Sanders, St. Albans, staged a small group, including Miltonia Bleuana, a richly-coloured Cattleya Leda var. Glow, and a few Odontoglossums and Cypripediums.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

A meeting was held at the Coal Exchange, Manchester, on November 7th, 1918, when the members of Committee present were:—The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, J. J. Bolton. D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, D. McLeod, E. Rogers, W. Shackleton, J. Thrower, and H. Arthur (Sec).

FIRST-CLASS CERTIFICATES.

Cattleya Fabia alba vars. Regina and Lille; Læliocattleya luminosa var. Gratrixiæ, and Brassocattleya Penelope; from S. Gratrix, Esq.

Cattleya Pittportia (Mrs. Pitt × Portia), C. Valeria var. coloratum, and Odontoglossum crispum The Premier—the finest white ground crispum yet seen in the north of England, a Gold Medal being awarded; from P. Smith, Esq.

Cymbidium erythrostylum: from Mrs. Bruce and Miss Wrigley.

Cattleya Sylvia var. ardentissima; from Messrs. Sanders.

AWARDS OF MERIT.

Cattleya labiata alba Samuel Gratrix, C. Prince John var. sulphurea, C. Triomphe d'Ypres (Mrs. Pitt alba × Fabia alba): Læliocattleya J. F.

Birkbeck magnifica, Lc. luminosa Golden Queen ; Cypripedium Desdemona West Point var., C. Ellis Markindale magnificum, and C. insigne Golden Fleece (Laura Kimball × Sanderianum) ; from S. Gratrix, Esq.

Cattleya Fabia alba Bridge. Hall var., C. Hardyana Queen Mary, C. armainvillierensis var. Valenciennes, and Læliocattleya luminosa Bridge Hall var. ; from Mrs. Bruce and Miss Wrigley.

Brassocattleya Penelope var. grandis ; from P. Smith, Esq.

Cypripedium Lord Wolmer var. Cyril ; from A. J. Keeling & Sons.

FIRST-CLASS CULTURAL CERTIFICATES.

To Mr. E. Rogers, for Cymbidium erythrostylum, and Læliocattleya luminosa Bridge Hall var.

A Gold Medal was awarded to S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), for a magnificent group of Orchids, many of which are mentioned in the above list of awards.

A Large Silver Medal was awarded to Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury (gr. Mr. E. Rogers) for a fine group, a good many also figuring in the award list.

A Silver Medal was awarded to Messrs. Cypher & Sons, Cheltenham, for a bright and attractive group.

Interesting exhibits were sent by P. Smith, Esq., Ashton-on-Mersey (gr. Mr. J. W. Kitchen) ; J. J. Bolton, Esq., Pendleton (gr. Mr. J. Law) ; Messrs. Keeling & Sons, Bradford, and Messrs. Sanders, St. Albans.

At a meeting held on November 21st, the members of Committee present were :—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, A. Hanmer, J. Howes, A- Keeling, J. Lupton, D. McLeod, J. McNab, E. Rogers, W. Shackleton, J. Thrower, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Cattleya Snow Queen West Point var. and Læliocattleya Zeno (Lc. St. Gothard × C. Luegeæ) ; from S. Gratrix, Esq.

Cypripedium elatior Westfield var. ; from Mrs. Bruce and Miss Wrigley.

Cattleya Anita (Portia × Dowiana aurea) ; from P. Smith, Esq.

AWARDS OF MERIT.

Cypripedium Moonbeam var. Elise, and C. nitens-Leeanum var. Oswaldii ; from Mrs. Bruce and Miss Wrigley.

Cypripedium James O'Brien var. Mancunium ; from S. Gratrix, Esq.

Cypripedium Seaforth Highlander (Dreadnought × fulshawense) ; from Messrs. Sanders.

FIRST-CLASS CULTURAL CERTIFICATES.

To Mr. J Lupton, for Cypripedium insigne var. Sanderæ, C. i. citrinum, and C. i. nanum.

Large Silver Medals were awarded to Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury (gr. Mr. E. Rogers), and to S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), for fine groups, in both of which Cypripediums were strongly represented.

Silver Medals were awarded to Col. Sir John Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton), and to Messrs. Cypher and Sons, Cheltenham, for fine groups largely consisting of Cypripediums.

Interesting exhibits were sent by P. Smith, Esq., Ashton-on-Mersey (gr. Mr. J. W. Kitchen); Capt. W. Horridge, Bury (gr. Mr. A. Coningsby): Messrs. Sanders, St. Albans; Messrs. J. & A. McBean, Cooksbridge; and Messrs. Keeling & Sons, Bradford.

The Secretary regrets to report the death of J. E. Williamson, Esq., of Stretford, a very old member, and E. H. Davidson, Esq., of Twyford, Berks (killed in action in France), an enthusiastic hybridist.

At the meeting held on December 19th, 1918, the members of Committee present were: The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, A. G. Ellwood, J. Howes J. Lupton, D. McLeod, J. McNab, E. Rogers, W. Shackleton, J. Thrower, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Cypripedium Perseus var. Alpha (Lady Dillon × Alcibiades illustre), a Silver Medal being added: C. Elise (Lady Dillon × Hermes); and Odontoglossum crispum var. Thelma; from W. R. Lee, Esq.

Cypripedium Armistice (Antinous × nitens), and Vanda Wrigleyi; from Mrs. Bruce and Miss Wrigley.

Læliocattleya Gen. Maud var. Victory (Lc. Rubens Lambeauiana × C. Hardyana), and Cypripedium Princess Patricia var. magnificum (nitens G. S. Ball's var. × Alcibiades illustre); from P. Smith, Esq.

Odontioda Ashworthiæ (Vuylstekeæ × Thwaitesii); from R. Ashworth, Esq.

Cypripedium Eileen Hanmer (aureum Surprise × Bianca); from A. Hanmer, Esq.

Brassocattleya Pallas var. Surprise (Bc. Veitchii × C. Warscewiczii): from Messrs. Charlesworth & Co.

Læliocattleya Queen Empress (C. Mossiæ × S. grandiflora); from Messrs. S. Low & Co.

AWARDS OF MERIT.

Cypripedium Idox var. Easter (Beryl × Ossulstonii); from the Rev. J. Crombleholme.

Cypripedium aureum Excelsior; from S. Gratrix, Esq.

Cypripedium Golden Dawn var. chesterense (Golden Gem × Sanacderæ), from A. Hanmer. Esq.

Læliocattleya Linda var. Orange King (Lc. Arachne × C. Dowiana aurea), from Messrs. Stuart Low & Co.

CULTURAL CERTIFICATES.

To Mr. E. Rogers, for Lælia Gouldiana and Platyclinis uncata.

To Mr. J. Lupton. for Cypripedium Leeanum giganteum.

A Large Silver-gilt Medal was awarded to S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), for a fine group, largely composed of choice Cypripediums, with Sophrocattleya Dorea var. Prince of Orange, Brasso-cattleya Ivernia, and other good things.

A Silver-gilt Medal was awarded to Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. Rogers), for a group of choice Cypripediums, with a few Vandas and Odontoglossums, and a fine batch of Lælia Gouldiana, a Cultural Certificate being awarded to the gardener for the latter.

Silver Medals were awarded to W. R. Lee, Esq., Heywood (gr. Mr. C. Branch), and to Col. Sir. John Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton), for fine groups, mostly composed of choice Cypripediums.

Interesting exhibits were staged by P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson): A. Hanmer, Esq., Chester (gr. Mr. Palin): R. Ashworth, Esq., Newchurch; The Rev. J. Crombleholme, Clayton-le-Moors (gr. Mr. E. Marshall): Messrs. Stuart Low & Co., Crowborough: Messrs. Charlesworth & Co., Haywards Heath; Messrs. J. & A. McBean, Cooksbridge; and Mr. W. Shackleton, Bradford, several of which figure in the above list of Awards.

At the meeting held on January 16th, 1919, the members of Committee present were: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, D. McLeod, J. McNab, W. Pickup, E. Rogers, W. Shackleton, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Lycaste Skinneri alba magnifica: from Mrs. Bruce and Miss Wrigley.

Cypripedium Conference (Chardwar Bulldog × Heramanii); from S. Gratrix, Esq.

Odontoglossum crispum virginale var. Pickupiæ; from W. Pickup, Esq.

Odontoglossum crispum var. Wilps; a heavily blotched variety; from P. Smith, Esq.

Cypripedium The Major (Gaston Bultel × Harrisianum superbum); from Tom Worsley, Esq.

AWARDS OF MERIT.

Cypripedium Draco Bridge Hall var.; from Mrs. Bruce and Miss Wrigley.

Lycaste Redwing (supposed natural hybrid); from S. Gratrix, Esq.

Cypripedium Odin (Sunrise × Antinous); from W. R. Lee, Esq.

Cypripedium Lebal (Leeanum Clinkaberryanum × Hannibal): from Tom Worsley, Esq.

FIRST-CLASS BOTANICAL CERTIFICATES.

Spathoglottis Petri and Catasetum splendens Lindenii; from Mrs. Bruce and Miss Wrigley.

FIRST-CLASS AWARD OF APPRECIATION.

Odontoglossum Gorizia (President Poincaré × Jasper); from W. R. Lee, Esq.

Silver-gilt Medals were awarded to Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. Rogers), and to S. Gratrix, Esq., Whalley Grange (gr. Mr. J. Howes), for very fine groups, both being strong in choice Cypripediums, while the former included some finely-grown Calanthes and forms of Lycaste Skinneri, and the latter some good Odontoglossums.

A Silver Medal was awarded to Messrs. Cypher & Sons, Cheltenham, for a fine group of winter-blooming Orchids.

Interesting exhibits were staged by Wm. Pickup, Esq., Great Harwood (gr. Mr. H. Mercer); Tom Worsley, Esq., Haslingden (gr. Mr. T. Wood); R. Lee, Esq., Heywood (gr. Mr. C. Branch); P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson); Messrs. Keeling and Sons, Bradford; and Mr. W. Shackleton, Bradford, several of them being included in the above list of Awards.

OBITUARY.

CHARLES G. ROEBLING.—"By the death of Mr. C. G. Roebling, of Trenton, New Jersey, which took place on October 5th last, America loses her oldest amateur Orchid grower and I a true friend." Thus writes Mr. James Goodier, who has long had charge of Mr. Roebling's collection, and who sends a copy of the State Gazette, of Trenton, N.J., containing a portrait of the deceased gentleman, who was in his 69th year, and had been ill for two months with Bright's disease. An engineer by profession, and President of the great Roebling Company, he was the engineering genius of numerous brilliant feats, but his private hobby was Orchids, of which he possessed a fine collection, including a good many of his own raising. In an article upon his favourite subject written some eighteen years ago, Mr. Roebling wrote: "One of the greatest pleasures of Orchid culture is derived from hybridising. It seems a long time to wait several years for a seedling to bloom, but when the hour comes that gives us a variety that not only is beautiful, but has never flowered before, it repays us for all the

trouble that has been given to the new plant." An account of Mr. Roebling's collection appeared in our pages as long ago as 1894 (ii. pp. 323-325), at which time a fine plant of Vanda Sanderiana bearing four spikes, with forty flowers and buds, was a prominent feature, and albino Cattleyas were among his particular favourites. Mr. Roebling's name is commemorated in Læliocattleya Roeblingii (C. Gaskelliana × L. purpurata). The future of the collection is at present uncertain.

ORCHID NOTES AND NEWS.

THE dates of meetings of the R.H.S. Orchid Committee for the coming year are announced as follows:—February 11th and 25th, March 11th and 25th, April 8th and 29th, May 13th and 27th, June 17th, July 1st, 15th and 29th, August 12th and 26th, September 9th and 23rd, October 21st, November 4th and 18th, December 2nd, and January 13th and 27th, 1920. After this list was printed, an official announcement was made that the prospects for the supply of tenting for the usual great meeting at Chelsea (suspended during 1917 and 1918), had become much more promising, so that a meeting will probably be held at Chelsea on May 20, 21 and 22. Growers—both amateur and trade—have been approached, and have made a most favourable response, and in all cases they promise to send abundant specimens illustrative of all the latest advances made in horticulture. The Council proposes to hold this meeting in aid of the Society's Wisley Gardens Endowment Trust Fund and the important practical and scientific work it was set up to accomplish. A decided announcement will be made later on. The Committee meets at 11.45 a.m.

THE R.H.S. HALL.—In the Annual Report for 1918 it is remarked that Fellows can look forward to occupying their own Hall at Vincent Square within (it is hoped) a short space of time, as the advent of Peace will liberate it from the military purpose to which it has been devoted during the last two years. How long it will actually be before the Fortnightly meetings can again be held in the Hall it is impossible to say, but the present inconveniences have been gladly borne in order that the building might be used for the benefit of our Australian kinsmen who have fought so nobly in defence of the Empire all through the war.

THE WAR RELIEF FUND has made satisfactory progress, and consultations are being held with the Official Representatives in this country of France, Belgium, Serbia and Roumania, with a view to ascertaining the most effective methods of dealing with the funds collected. A contribution by the Society of £1,000 to this Fund is included in the Balance Sheet.

THE R. H. S. JOURNAL.—Regret is expressed as to the unavoidable delay which has attended the publication of the Society's JOURNAL during the year—delay due entirely to the three-fold causes of depletion of staff, extreme shortage of paper, and the difficulties which have attended the printing trade all over the country. It is confidently hoped that the present year may see a great improvement in these respects.

BRITISH ORCHIDS.—In the items of Special Expenditure for the year occurs an item, Paintings of British Orchids, £56 10s. 4d.

The Society's numerical position has greatly improved during the year, the number of new Fellows elected being 1146, and the losses by deaths and resignations 345, leaving an increase of 801, and a net increase of income of £911 8s., which is highly satisfactory considering the abnormal circumstances.

The Manchester and North of England Orchid Society will hold meetings at the Coal Exchange, Manchester, on February 6th and 20th and March 6th and 20th. The Committee meets at noon, and the exhibits are open to inspection from 1 to 4 p.m.

ABNORMAL CYPRIPEDIUMS.—A curiously abnormal Cypripedium is sent by Messrs. Sanders, St. Albans. It has three free sepals, most resembling the dorsal in shape, four petals, two staminodes, and four anthers, the pouch being absent, though there is one short additional segment of a nondescript character. It has all the characters of two flowers fused into one with supression of the lip. It is unnamed, but appears to belong to the C. Leeanum group or some derivative of it.

Another curiosity comes from Mr. J. H. Lane, Brougham Hall Gardens, Penrith. It is a flower of the richly-coloured C. Harrisianum superbum with a double pouch, that is to say the basal part of the lip is single, but in front of this there is a division, and there are two perfect pouches placed side by side. It is probably only an accidental freak.

A very curious flower of Cypripedium triumphans has appeared at Kew. Its most obvious characteristic is the absence of the lip and the diversity between the two petals, but these are connected with other significant abnormalities. For example, the place of the lip is taken by a stout tubercle, a quarter of an inch long and of column-like texture, and bearing a few hairs similar to those of the column, while the usual stigma is broken up into three, somewhat unequally developed, but thus restoring the original number. The petals are curious. The one on the left is scarcely a quarter as broad as usual, but fleshy and of lip-like texture, while the opposite one is strongly sagittate at the base on the upper side, while above the middle

on the same side is an incurved fold, like that of the side lobe of the lip, both in shape and texture. This petal has began to be a lip as regards texture, curvature and coloration, and it is significant that the anther on the same side of the column is undeveloped. The staminode is modified in shape, but the two sepals are normal in shape and colouring. Something has occurred to upset the usual development of the flower, and hence the displacement of parts.—R.A.R.

CALANTHE GATTON ALPHA.—A pretty hybrid derived from C. Darblayana var. Wm. Murray and C. vestita luteo-oculata, which was exhibited by Sir Jeremiah Colman, Bart. at the R.H.S. meeting held on January 14th, showing white sepals and petals and a pink lip. Sir Jeremiah afterwards sent us a flower from the same batch having a white flower with a yellow eye, thus closely resembling the C. vestita parent.

THE ORCHID REVIEW.—We have numerous enquiries respecting binding cases and bound volumes, but we regret to say that we have not yet been able to obtain them. The return to normal conditions is not yet in sight; in fact, at the present moment the difficulties respecting printing and paper are greater than ever. The cost of printing alone has enormously increased, and paper is four times its pre-war cost. The art paper on which the Review has long been printed is no longer obtainable, and the substitute used for the present issue is the best that we have been able to get. A statement received shows that various trades have precedence over printers and bookbinders in demobilisation, and it has been impossible on the present issue to make up any of the lost time. A first improvement is that the necessity of a permit to send abroad, and of submitting a monthly list of names and addresses, has been cancelled, and that communication with Belgium is again open. We must beg the indulgence of our readers a little longer.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

J.H.L.—The names are: 1, Lælia anceps, fairly representing the old coloured form; 2 and 3, forms of Cypripedium superciliare; 5, C. Lathamianum; 4, 6, and 7, forms of C aureum (nitens × Spicerianum), which varies enormously.

Photograph received with thanks.—F. & B.

F.D.—Many thanks. We hope to reply in a few days.

M.P.—The matter shall have attention next month.

E.T.E. The A1 fibre received is the roots of Lastrea Filix-mas, which have long been recognised as a valuable potting medium. An article on the subject appears at pp. 18-20.

C.S.; T.P.—Shall be sent at first opportunity.

C.E.S.—Many thanksfor the flower duly to hand.

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VOL. XXVII. MARCH—APRIL, 1919. No. 315-316

THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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The Orchid Review

VOL. XXVII. MARCH-APRIL, 1919. NO. 315-316.

OUR NOTE BOOK.

IT is a little difficult to write of Orchidology in 1918, for everything was overshadowed by the great world tragedy which reached the culminating point just before its close. The conditions were too abnormal, and the wonder is that the interest was maintained at all. Under ordinary circumstances, the year would have witnessed another great Quinquennial Horticultural Exhibition at Ghent; as it was, we hardly knew whether Orchids still survived in Belgium, until the signing of the Armistice again opened communications, and brought the news given at pp. 22-24. The events of the year were practically limited to the ordinary fortnightly meeting of the Royal Horticultural Society and the Manchester and North of England Orchid Society, and these have been full of interest, and have afforded abundant evidence of the steady progress in hybridisation that is being carried on.

How great this progress is, may be seen from the R.H.S. awards for the year, and from the fact that with a single exception they were gained by home-raised seedlings. These awards consisted of 21 First-class Certificates, 33 Awards of Merit, 22 Preliminary Commendations—these only given to promising seedlings—and three Cultural Commendations. It was one of the latter that formed the exception just mentioned, the award being given to a well-grown plant of the rare Neomoorea irrorata, from the collection of H. T. Pitt, Esq. It is of interest to note that the list of Preliminary Commendations includes 15 Odontoglossums, and six of the allied Odontioda, which testifies both to the popularity of the group and to the facility with which seedlings can now be raised. An analysis of the recipients of First-class Certificates shows three representatives each of Cattleya, Cypripedium, Læliocattleya, Odontioda, and Odontoglossum, two Brassocattleyas, and one each of Brassocatlælia, Cymbidium, Miltonia, and Sophrocatlælia. The Awards of Merit were gained by nine Læliocattleyas, seven Cattleyas, six Odontoglossums, four Odontiodas, and two Brassocattleyas, while Cypripedium, Dendrobium, Disa, Sophrocattleya, and Sophrocatlælia each contributed a single representative. This progress is

the combined result of hybridisation and selection along definite lines, the hybrids which show improvements in shape or colour, and to a certain extent in vigour and floriferousness, being again used as parents.

One interesting new generic hybrid appeared, in Aëridovanda Munbyi, the result of a cross between Aërides Vandarum and Vanda teres, which was exhibited by Sir Jeremiah Colman, Bart., and received a Preliminary Commendation. It is most like the Aërides in general character, but modified in floral character by the influence of Vanda teres; the terete leaves of both parents being naturally reproduced. Most of the other novelties were of complex parentage, as indicated above, and it is not a little remarkable that most hybrids of the popular genera mentioned show a scarcely reduced fertility as compared with the original species.

A subject that received considerable attention in our pages was the Root-fungi of Orchids, and their bearing upon the germinating of Orchid seeds as a practical question. Details of the methods adopted by Noel Bernard and Dr. Hans Burgeff were given, and a recipe for the solution used by the latter. In this connection we may mention the experiment of germinating seedlings in an aseptic tube by means of concentrated solutions, as recorded at pp. 55, 135, which suggests that it is all a question of nutrition; in other words of supplying the necessary food to enable the embryo seedlings to get over the initial stages of germination. How far this can be secured by correct cultural conditions remains to be proved, but this is all that is available in a state of nature. Germinating seedlings are found in the most diverse conditions in a wild state, and one can hardly believe that the supposedly essential root-fungi were always present beforehand. The experiment carried out by M. Fernand Denis should be repeated with other subjects.

Experiments carried out by M. F. Denis in another direction have also yielded interesting results, for he has obtained further evidence of natural hybridity in the genus Ophrys, which was scarcely more than suspected before the series of experiments began. The records will be found at pp. 82-83, and 102-103, and as the experiments are being continued we hope to receive further examples during the present season. It would also be interesting if M. Denis would give a few particulars about the germination of the seedlings and the conditions under which the plants are grown.

The account of Mr. C. W. Powell's Orchid collection in Panama, (pp. 179-181) is very interesting, and gives a good idea of the possibilities of Orchid culture in the tropics, where artificial heat and the limitations of a glass house can be dispensed with. The discovery of the eastern Phaius

grandifolius as a naturalised plant in the same country (p. 219) is one of the results of Mr. Powell's activities, and a series of dried specimens since received from him promises to throw further light on the Orchid flora of a neglected but very interesting country. The Orchids of Costa Rica are also receiving attention at the hands of Mr. C. H. Lankester, so that we hope to have other interesting details to report.

Several well-known Orchidists have been removed by death during the year. John Leeman, of Heaton Mersey, was for many years one of the most enthusiastic Orchidists in the Midlands, and his collection of Odontoglossums and albino Cattleyas was long famous. F. Menteith Ogilvie, of Oxford was a member of the R.H.S. Orchid Committee, and an exhibiter of many choice groups at the Society Shows. A. J. Oakshott, of Bidston, Cheshire, was for many years an enthusiastic Orchidist of the Manchester district. E. H. L. Davidson, of Twyford, Bucks., a member of the R.H.S. Orchid Committee, and the donor of the Davidson Cup, was killed in action in France. W. P. Burkinshaw, The West Hill, Hessle, E. Yorks., an enthusiastic Orchidist since 1894, and a highly successful exhibitor at the York Gala, passed away at the mature age of 83. Lastly, C. G. Roebling, of Trenton, New Jersey, one of the leading amateur Orchidists of the United States. All these have left gaps in the ranks, which we hope will be filled by other lovers of these beautiful plants as normal conditions return.

One final matter must be included in our summary of the events of the year, namely the destruction of the Orchid Nursery of M. Th. Pauwels, at Meirelbeke, within a few hours of the signing of the Armistice, by which the result of twenty-five years' work was lost in a few minutes, as recorded last month at pp. 22, 23. Such an event is unique in the annals of Orchidology, yet it is only one of the numberless outrages that our gallant allies have suffered in a War of unexampled barbarity, and it should strengthen our resolution to organise a League of Nations with all the powers necessary to make the repetition of such an outrage impossible in the future. In it lies our only hope for safety, and no Orchidist should miss an opportunity of helping on the good work.

At the annual meeting of the Royal Linnean Society of Brussels, held on January 26th, we are informed that a motion was unanimously passed, to remove from its list of members, and not admit in future, Germans, Austrians, Bulgarians, and Turks; to advise its members to resign from all Societies of the Central Powers; to refuse to exhibit or act as jurymen, or to take part in any horticultural exhibition anywhere to which Germans, Austrians, Bulgarians or Turks are invited, and to cease their collaboration in any

enterprise where they would meet men of the Central Powers; to stop the exchange of its publications, and to engage its members to stop all individual exchange of publications or works with natives of the Central Powers; and to exclude for ever those of its members who have compromised themselves with the enemy during the abhorred occupation.

We can understand the intense provocation under which this motion was drawn up, and the fear of a repetition of the outrages which our Belgian friends have suffered, but we should like to see a way left open for contrition and amendment. We look to the destruction of the system which alone made such outrages possible, as one of the surest guarantees of sanity in the future, and others are being devised. A policy of isolation will be increasingly difficult as time goes on, to say nothing of higher considerations, and our Belgian friends can hardly have forgotten an outrage of a different kind which was perpetrated thirty years ago, and under which Orchidology has suffered ever since. The Reichenbachian Herbarium, which had been sealed up for a period of twenty-five years under an arbitrary act which no sane man could have perpetrated, was opened only three months before war broke out, and was to have been available for study at the end of the year. The War has extended the period to thirty years. Is it to extend for ever? An International League of Science would have prevented such an outrage, and it is one of the possibilities of the future.

DENDROBIUM SPECIOSUM VAR. NITIDUM.—A fine specimen of this rare variety, bearing a profusion of racemes of light yellow flowers, was exhibited at the R.H.S. meeting held on March 11th last, by Sir Jeremiah Colman, Bart. The variety is a native of tropical Queensland, and was described by the late F. Manson Bailey, in 1885 (*Proc. Roy. Soc. Queensl.*, i. p. 10), from a plant which bloomed in the collection at Bowden Park, Queensland. It was said to differ from other varieties chiefly in its short dense racemes and glossy foliage, but a point which we notice is that the flowers were considerably smaller than in the type, while the stems are also much more slender, in which latter respect it recalls the variety Hillii. The flowers are greenish yellow on first opening, ultimately becoming clear light yellow, with a few brown markings on the side lobes of the lip. It is probably a local variety. In 1896, Bailey also described a var. curvicaule (*Bot. Bull.*, xiv. p. 12), a native of Lady Elliott's Island, in which the stems were said to be curved, sometimes almost into a half circle, and the flowers small, and cream-coloured with some thick purple bars on the lip. We have not seen it.

The history of the species and its varieties will be found at pp. 137-139 of our fifteenth volume, where also is a figure of a remarkably fine specimen of the variety Hillii.—R.A.R.

ODONTOGLOSSUM HUMEANUM.

WE are now able to supplement the history of the interesting hybrid from Odontoglossum maculatum × Rossii whose history was given at pp. 4-6. The plant was exhibited at the meetings of the R.H.S. Orchid and Scientific Committees held on February 25th, and by the latter was awarded a Certificate of Appreciation in recognition of the scientific interest of the experiment to prove the parentage of the natural hybrid. A painting has also been made for preservation at Kew, to which establishment the plant has now been presented.

The tradition of a second natural hybrid still lingers, and was mentioned by Mr. J. O'Brien at the meeting of the Orchid Committee. As there was no record of the exhibit in the *Gardeners' Chronicle* report, we sent a short history of the question, which appeared at p. 121, and at p. 136 Mr. O'Brien replied: "The statement reflecting on the correctness of the record of O. Humeanum, Rchb. f., . . . which is based only on conjecture, tends to obscure the important fact that the home-raised specimen shown by Mr. Rolfe satisfactorily establishes the correctness and record of O. aspersum." But the latter record has never been in doubt, and was as clearly stated in Reichenbach's original note as in my recent one, consequently there was nothing to obscure. And my remarks were not based on conjecture, but on a careful examination of all the facts available. I have never believed in the existence of a natural hybrid between O. Rossii and O. cordatum, partly because no evidence had been found that the two grow together (see p. 44), partly because of the absence of O. cordatum characters from the known hybrids; and this was the basis of our experiment. As long ago as April, 1889, Mr. O'Brien sent to Kew flowers of "O. Humeanum" from two different plants, which are carefully preserved with the record as received. Three years later two others were sent by him. As recently as February last the name and parentage were repeated (see *G. C.*, p. 52), but the characters of the hybrid are those of O. maculatum, as the recent experiment has confirmed. That Mr. Burnley Hume's original plant was something else is a tradition, which after 43 years cannot yet be established, and no artificial hybrid between the two is yet known. The appearance of such a hybrid would probably establish the distinctness of O. Humeanum, Rchb. f., and we hope to see the experiment made.

One other record deserves mention. The report of the R.H.S. Scientific Committee for March 11th contains the following (*G.C.*, p. 145): "Odontoglossum aspersum.—Mr. G. Wilson showed several early drawings of the plant known as O. Humeanum and the alleged parents, and of O. aspersum

and its parents." Unfortunately, it carries the question no further, and I find no record of the earlier meeting when the seedling was exhibited. Can anyone trace a drawing of Mr. Burnley Hume's original plant?

In searching the records we have discovered what we believe to be an earlier appearance of this hybrid. In 1847, a reputed O. cordatum appeared in the collection of S. Rucker, Esq., of which a coloured plate appeared (*Paxt. Mag. Bot.*, xiii. p. 147). It is not that species, and it has since been referred to O. maculatum, but with this also its characters are at variance. It has more of the O. Rossii shape, but the colour is light greenish yellow, with light brown markings, and from the combination of characters we believe that it must be referred to O. Humeanum, which is known to vary considerably. It probably appeared as an imported plant, but no dried specimen can be traced.

R. A. ROLFE.

LEAF SPOT OF ORCHIDS.

AN article on Leaf Spot in Orchids, by Mr. W. B. Brierley, has just appeared (*Gard. Chron.*, 1919, i.p. 61). It is remarked that "Orchid Spot" is not a single and specific disease, but a congeries of diseases, all little understood, and urgently in need of detailed investigation. The one to which the term is most commonly applied, consists of pale straw-coloured spots, of irregular shape, on the upper surface of the leaves, which ultimately become brown and shrivel. This is the result of chilling the leaves below their power of resistance, and is generally caused by the drip of condensed water from the cool glass roof. It is not due to the attack of a parasitic fungus, and hence, cannot be checked by antiseptic solutions. The obvious, but only remedy, is to remove the cause of the mischief.

A second form of spot is prevalent in the neighbourhood of large towns, and this is believed to be chiefly due to atmospheric pollution, many Orchids being peculiarly susceptible to the presence in the atmosphere of minute quantities of deleterious substances. This, like the preceding, appears to be common to all the more usually grown species of Orchids.

Certain other forms of spot are caused by parasitic fungi, as Hypodermium Orchidearum on Cymbidium eburneum, by a Cladosporium, possibly C. Orchidis, or the ubiquitous C. herbarum, and by Botrytis cinerea. In such cases, sponging or spraying with a 3 to 4 per cent solution of calcium bisulphate is recommended, accompanied by the most rigorous cleanliness, and the immediate removal and destruction by burning of every fragment of diseased material.

There are other forms of spot which have been found on various Orchid leaves, the cause of which is at present imperfectly known, though it is

believed that parasitic organisms are not concerned in their initiation, as there are no symptoms of local poisoning. Some unfavourable cultural factor is suggested as the probable cause.

Mr. Brierley remarks that in the casual examination of Orchid Spot, as specimens have come to hand, seven distinct types of disease have been recognised. Of these it is highly probable that four are the result of the action of parasitic organisms, one of local chilling of the leaf tissue, one probably of atmospheric poisoning, and one of some other physiological derangement of the protoplasm, due probably to unsuitable cultural conditions. And he has no doubt that there are others. At present all are lumped together as "Orchid Spot," and horticulturists endeavour to control a disease of physical causation by a fungicidal spray; or a fungal epidemic by regulating to a nicety the temperature of the water supply. A detailed and intensive study of the subject is much wanted, because it is necessary to ascertain the cause of a disease before one can apply a remedy with any hope of success.

ODONTOGLOSSUM MACULATUM & O. CORDATUM.

A QUESTION as to the habitat of Odontoglossum cordatum is raised in connection with the origin of the natural hybrid O. Humeanum (pp. 4-6), and a search into the records shows a remarkable amount of confusion with the allied O. maculatum.

O. CORDATUM, Lindl., was described in 1838 (*Bot. Reg.*, xxiv. Misc. p. 50), and shortly afterwards figured (Kn. & Westc. Fl. Cab., iii. p. 37, t. 100), from a plant which flowered in the collection of George Barker, Esq., of Birmingham. The plant had been received from Mr. Ross, who had been sent to Mexico by Mr. Barker, to collect Orchids. Shortly afterwards Lindley expressed a doubt (*Sert. Orch.*, sub t. 25) as to whether it was distinct from O. maculatum, Llav. & Lex., a species then known only from description, but this doubt was removed when some two years later the true O. maculatum also bloomed with Mr. Barker. In 1847 a reputed "O. cordatum" was figured by Paxton (*Mag. Bot.*, xiii. p. 147), from a plant which flowered in the collection of S. Rucker, Esq., of Wandsworth, but it is not that species. It has since been referred to O. maculatum, but we believe it is actually a natural hybrid between the latter and O. Rossii, hence a form of O. Humeanum (see p. 42). Three years later, O. cordatum was figured under the erroneous name of O. maculatum (*Bot. Mag.*, t. 4878), from a plant which flowered at Kew, and this latter Lemaire described as a new species, under the name of O. Hookeri (*Ill. Hort.*, iii. Misc. p. 41). In 1859 the species was again figured and described as O. Lueddemannii, Regel

(Gartenflo., viii. p. 353, t. 275, fig. 1), this plant having been received from M. Luddemann, Paris, under the erroneous name of O. maculatum.

O. MACULATUM, Llav. & Lex., was originally described in 1824 (Nov. Veg. Descr., i. p. 35), from specimens collected on trees on the Irapean Mountains, near Vallisoleta, in the State of Michoacan. Fifteen years later the species flowered in the collection of Mr. Barker, and was figured by Lindley (*Bot. Reg.* xxvi., t. 30), who noted its distinctness from O. cordatum, and mentioned a wild Mexican specimen collected by Count Karwinsky, which he had received from Mr. Bateman. This and a flower of Mr. Barker's plant are preservèd in Lindley's Herbarium, but the sheet also contains specimens of O. cordatum that were added at a later date. In 1858, O. maculatum was figured and described by Lemaire, under the name of O. anceps (*Ill. Hort.*, iv. p. 157, t. 128), from a plant which flowered in the establishment of M. Verschaffelt, and which had been received from Mexico direct, through the brothers Tonel. It is said to be allied to O. cordatum, which rather suggests that the true O. maculatum may have been entirely overlooked.

The distribution of the two species is very imperfectly known. O. cordatum has been collected in Guatemala, at the Cumbre de Chocas, by Hartweg, and in a locality unspecified by Skinner, while from South Mexico we find specimens localised Oaxaca, 4,000 feet, Galeotti, and Orizaba, F. Mueller. The latter specimen has a curious history. In Lindley's Herbarium the collector's ticket is wrongly inscribed "O. hastilabium, Lindl. Bot. Mag. t. 4278," and the specimen is mounted on the sheet of O. maculatum. The corresponding Kew specimen is labelled "O. maculatum, teste Lindley." Both are simply O. cordatum, but the confusion does not affect the original specimens, for the date is 1853. O. maculatum also occurs in the Oaxaca district, but at a higher altitude, for there are wild specimens from several different collectors, the altitudes ranging from 7,000 to 9,000 feet, and the species also occurs in the State of Michoacan, a considerable distance to the north west of Oaxaca. Whether the areas of the two anywhere overlap is uncertain, but it is significant that collectors of O. maculatum and O. Rossii have not collected O. cordatum. Perhaps some of our readers in Central America can throw further light on the subject.

There is a very distinct variety of O. cordatum, called sulphureum (Rchb. f. in *Gard. Chron.*, 1880, ii. p. 8), which may be regarded as the albino of the species, as it has entirely lost the brown markings, leaving the flower light green with the usual white area on the lip. It flowered in Mr. Lee's fine collection at Leatherhead. Mr. Day figured a similar plant in May, 1883 (*Orch. Draw.*, xxxv. t. 27), this having been obtained from Mr. R. Jones, Lower Norwood Nursery.

R.A.R.

BRASSOCATLÆLIA IMOGEN.

THE annexed figure represents a very charming hybrid, that was raised by Messrs. Flory & Black, Orchid Nursery, Slough, from Læliocattleya Trimyra and Brassocattleya langleyensis alba, and received an Award of Merit from the R.H.S. on February 11th last. The flower is of excellent

Fig. 4. BRASSOCATLÆLIA IMOGEN.

shape and substance, the broadly ovate petals and undulate lip setting it off to great advantage. The colour may be described as ivory white, for there is a faint tinge of yellow derived from the Lælia flava ancestry, and the disc of the lip is chrome yellow. The shape is largely derived from Cattleya Trianæ, which comes in through both parents, while the trace of fringe to the lip is derived from Brassavola Digbyana.

THE CULTIVATED ARUNDINAS.

By H. N. RIDLEY.

THE genus Arundina is a troublesome one as regards species. Although easy to distinguish in the wild state, herbarium specimens, on which much has been based, are as a rule unsatisfactory.

ARUNDINA BAMBUSÆFOLIA, Lindl., based on Cymbidium bambusæfolium, Roxb., is the common Indian species. It is a tall and stout plant, some 5-7 feet high, with large pink flowers, 2-3 inches across, and rather narrow sepals and petals. It is well figured in *Orchid Album*, t. 139, and *Bot. Mag.*, t. 7284. Sir Joseph Hooker remarked of it: "I know no more attractive picture of its kind than a patch of grass land in the Khasia hills adorned with clumps of it in full flower."

A. DENSA, Lindl. (*Bot. Reg.*, xxviii. t. 38), was based on a plant sent to Loddiges by Cuming, and has been accredited to Singapore and to the Philippines. It exactly matches a plant from Mt. Ophir, where Cuming also collected. This plant also grows on Gunong Kerban and other Perak hills, and is remarkable for the large size of the flowers, the broad, ovate petals, the large lip, and very rich colour. It is the finest species of the genus, the flowers resembling a Lælia. Lindley's figure does not do it justice. It used to be much persecuted on Mt. Ophir; everyone who ascended the mountain brought down bundles of it, and all the best of the Spathoglottis aurea, too, until there was but little left. We also get a smaller but very attractive plant on all the higher hills of the peninsula. It especially thrives on gravelly islets in the mountain streams, where it is often very plentiful. The petals are much narrower than in the former, the colouring paler, and the plant only three feet high, and with narrower leaves. Although nearer the Indian A. bambusæfolia, it is impossible to distinguish it specifically from the Mt. Ophir plant. Both forms were in common cultivation in Singapore, but are not as easy to propagate as the next species, and are apt to die out after culture.

A. SPECIOSA, Blume (*Bijdr.*, p. 401, t. 73), is a short plant, usually abou two feet high, sometimes smaller, having smaller white flowers, with a pink edge to the lip and a yellow disc. It was originally described from Java, but also occurs in Sarawak and the Malay Peninsula. It has been obtained at Setul, and used to be abundant as a garden escape or planted on the railway banks near Kuala Lampur. On Kedah Peak it grows on the northern precipices, and I shall never forget my collecting it there. Just between me and it was a large patch of grassy turf, on which I was about to step, when an old Sakaj or half-bred wild tribe man who accompanied me pulled me back and gave a kick to the turf, which immediately slid off

completely and fell about 3,000 feet into the forest at the foot of the mountain. Had I stepped on it I should certainly have gone with it. In this species bulbils are borne on the sides of the stems, especially after the flowers have been cut. These have a broad base and a leafy stem, so that when detached and pushed into the ground they soon become good-sized plants. So easy is the propagation of this plant that it is much the commonest in gardens in the Straits Settlements. The plant also often bears more than one raceme at the top.

A. CHINENSIS, Blume (*Bijdr.*, p. 402), was thought to have been introduced from China, and has puzzled everyone by the statement that it has five keels on the lip, a thing I have seen in no Arundina flower, though in dried specimens it is possible to mistake the outer nerves for real keels. The Hongkong plant has a remarkably broad, deep crimson edge to the lip, and the sepals and petals are pure white. Like A. bambusæfolia, it fails to produce bulbils. A. Philippii, Rchb. f., and A. Meyeniana, Rchb. f., are probably the same thing.

A. SUBSESSILIS, Rolfe (*Kew Bull.*, 1914, p. 374), differs in having small flowers in a compact head. It is a native of Upper Burma, and was described from a plant that flowered in the collection of Mr. H. J. Elwes.

There are several other species. A. minor, Lindl., a native of Ceylon, has narrow, coriaceous leaves and small flowers. A. revoluta, Hook. f., grows near the Taiping Waterfall, and has narrow grassy leaves and very small pink flowers, A. affinis, Griff., is a native of the Himalayas. It has narrow leaves and a highly-coloured margin to the lip. It may be a variety of A. speciosa.

DENDROBIUMS FROM STREATHAM.—Two very handsome Dendrobiums are sent from the collection of R. G. Thwaites, Esq., Streatham Hill. D. Austinii is a brilliant hybrid which was raised in the collection some years ago from D. Cybele nobilius × D. Ainsworthii splendidissimum, and is excellent both in shape and colour. The flowers sent have an expanse of 3¾ inches, and the broad sepals and petals are rich purple with a lighter base. The lip, which is over 1¼ inches across, has a large maroon disc, with a broad white zone round it, and a sharply defined purple area in front. D. nobile Thwaites' var. is still larger, and of great substance. The petals are 1¼ inches broad, white with bright purple apex, and the lip is 1½ inches across, white with a rose purple apex, a large dark maroon disc, and the typical nobile shape. The sepals are rather more suffused with rose purple. It is a charming thing, and one of the finest forms of the D. nobile nobilius type that we have seen. We are not sure of the origin of this fine variety, but it probably came out of some importation of the species, as have two or three other exceptional forms.

CALENDAR OF OPERATIONS FOR MARCH-APRIL.

By J. T. BARKER, Orchid grower to His Grace the Duke of Marlborough, Blenheim Palace, Woodstock, Oxon.

WITH the gradually lengthening days comes the necessity for an increase of temperatures in the Orchid houses; and this is perhaps the most difficult season of the year to maintain regular conditions, and the proper balance of heat and moisture so essential to success. Owing to the many sudden changes which occur during this fickle period, the grower should be constantly on the alert, and prepared for whatever fluctuations may occur. A very cold morning may be followed by bright sunshine accompanied by a cold east or north-east wind, and therefore a close watch is necessary on the heating apparatus to prevent undue fluctuations. During periods of trying times like these it is often impossible to admit air to counterbalance the heat from the pipes and the sun, hence the necessity of using abundance of moisture to prevent a hot, stuffy atmosphere, which is not only harmful to the plants, but one which insect pests revel in, and these, if not checked, will soon do irreparable harm.

TEMPERATURES.—We may now look for more genial conditions, which will help the plants to start on their annual growth. A slight increase in the temperatures of the houses is now permissible, with a corresponding increase in atmospheric moisture, according to the different houses and the plants grown in them. These increases should be gradually advanced until the summer or growing conditions are reached.

VENTILATION.—All Orchids delight in a sweet and pure atmosphere, hence the necessity of paying careful attention to the manipulation of the ventilators, so that no draughts are caused, as no plant can resist draughts, any more than a human being can. Tender plants are like delicate children, and should be studied in much the same way as regards their requirements, and it is useless to expect them to thrive if placed under adverse conditions.

WATERING.—The plants, now they have commenced their growth, will gradually take up more water at the roots, but care is still necessary in its application. Some plants will be more advanced than others, therefore will require more to support them; but for some little time, until the plants get fully into growth, allow them to dry out between each application of water. Make sure that the plant actually requires water before it is applied, and special care must be taken with those that have been recently repotted.

SHADING.—Up to the time of writing there has been no necessity to use shading; but when the wet, dull weather, which we have been having for some considerable time, passes away, we may experience some bright, sunny days, hence the reason why the blinds should be in position ready for use. After weather and conditions like those we are passing through, the plants

should be inured to the sun gradually, as the foliage may easily suffer if exposed suddenly to strong light.

POTTING.—The potting season will now commence, and every opportunity should be taken to push on with this essential work. In most collections throughout the country, after the strenuous times of the last four years, there are undoubtedly many plants that have not had the attention in potting necessary to keep them in the best possible condition. The compost having become decomposed, the plants will soon be on a down grade, unless they get the requisite attention in their proper season, and in order to facilitate this work, it is desirable to get together the different materials required as soon as possible (there being a scarcity), so that no valuable time may be lost. Each Orchid should be potted at that season when it least feels the check of disturbance, and that is when it is about to push new roots, and thus is able to avail itself of the new compost.

CATTLEYAS, Læliocattleyas, and allies, which have produced their flowers during the autumn and winter months, and are now showing signs of activity by pushing new roots, may have attention as regards repotting. These remarks also apply to seedlings of any of the allied genera which have as yet not attained sufficient size or strength to produce flowers. Of the species, C. labiata, C. Gaskelliana, C. Percivaliana, and C. Trianæ, are among those that now require attention in this respect. We may hope soon again to be able to procure osmunda fibre, which makes the best possible compost for these favourite plants, but failing this, we must adhere to well cleaned A1 fibre, broken leaves, and sphagnum moss. The plants must be potted firmly, in small pots, according to their size, and be watered with extreme care until new roots are pushing freely. The numerous hybrids may also have attention, if necessary, when their flowering season is past.

DENDROBIUMS.—During the present period, the whole of these plants which require new rooting material should have attention. In going through a collection of these, or indeed any other plants, it is not desirable to take them just as they come, but to pick them out as they attain the desired conditions. The right time to pot is when new roots are in evidence at the base of the pseudobulbs, or of the young growth. Many strong-growing Dendrobiums will produce young growths of considerable length previous to rooting, therefore the grower should wait until they are seen to be pushing before disturbing the plants. By waiting for the time when new roots are ready to push, the plants speedily establish themselves in the new material, and the risk of the plants receiving a check, or the young growths rotting off, is reduced to a minimum. A most suitable compost for these plants is made up of equal parts of clean A1 fibre and sphagnum moss.

Ordinary pots, of the smallest size possible, make suitable receptacles, and ample drainage should be given, so that the water passes speedily away. After repotting, the most critical time in the whole year may be experienced, especially should the weather be cold and damp, and it requires much discretion in the application of water to the compost at such times. In watering all plants with young tender roots, care should always be taken that the water is of the same temperature as the house.

DECIDUOUS ORCHIDS.—Calanthes, Thunias, Cyrtopodiums, and other deciduous plants, will at this season need attention as regards repotting. Good fibrous loam is the chief element of the compost, and it is essential to these heat-loving plants that it be warmed before being used. Whilst in growth, they require plenty of heat and moisture in the atmosphere, and water must be applied with extreme care until the plants are well rooted, after which plentiful supplies may be given. Calanthes should be potted firmly, whilst Thunias require a compost which their succulent roots can easily penetrate.

PHAIUS.—When these plants have finished flowering, and their young growths have got nicely away, any necessary repotting should be undertaken. They require a compost in which good fibrous loam may be the predominant partner, but the plants thrive in almost any compost, providing it is porous, and water is applied discreetly.

MILTONIA VEXILLARIA and its hybrids will now be pushing flower spikes from the partly developed growths. While in this condition, the plants should be watered whenever they become dry, and after the weather becomes mild they may be placed in cooler quarters. The warm end of the Cool house or a cool position in the Intermediate house will provide suitable quarters for them during the summer months, where they will make a display for a considerable time. Before the plants commence to open their flowers, it is a good practice to thoroughly cleanse them, to obviate an attack of thrip and other insect pests whilst they are in bloom.

ODONTOGLOSSUMS.—Many of these plants that were not in a fit condition to pot in August or September will be ready for potting now, that is if the young growths have attained sufficient length and are about to push new roots. All those in need of new material may be done, using a compost of two parts good fibrous peat, one part AI fibre, two parts sphagnum moss, and one of broken leaves, with some small broken crocks added. Where considerable numbers of these plants are grown, some will be sure to require attention the whole year round. When the new growths are about three inches high is the proper time to repot Odontoglossums, irrespective of season. At the present time there are, in many collections, home-raised hybrids, and those that have passed through the winter in small pots will receive considerable benefit if carefully shaken out and given

fresh material, even if placed in the same sized pot. Those that have made good progress and are growing freely may be given a shift into a larger pot, but it is a great mistake to overpot seedling Orchids. My experience teaches me that seedling Orchids do not stay long in any one condition; they are either improving or going back, and should have every inducement to push on rapidly. In repotting small seedling Orchids, special care should be taken in the preparation of the compost. The materials should be thoroughly cleaned and mixed together, and made moderately firm. For these small plants no better compost exists than peat fibre and sphagnum moss, with a small quantity of broken leaves added.

TRICHOPILIAS.—T. fragrans will be starting into growth, and the necessary potting may be done, using a compost of equal parts of peat and sphagnum moss. Ordinary pots or shallow pans can be used, giving good drainage. These plants thrive in a cool Intermediate house, and whilst in full growth, should be watered freely, and at no time should they be deprived of water long enough to cause shrivelling. The highly-coloured T. coccinea and its varieties, also the white T. Backhouseana, will soon be coming into flower, and they will now take an increased supply of water.

VANDAS and AERIDES will now require more water at the root, and the general surroundings should be kept in a humid and growing state. V. suavis and V. tricolor will be showing flower spikes, and should have water afforded them whenever they become dry. These plants thrive best when placed upon a damp bottom, as dry parched surroundings do not answer their requirements.

VANDA CŒRULEA, as it commences to grow, may have attention as regards repotting. After repotting, care must be taken that they do not suffer from the effects of strong sunshine until they are re-established. Those plants that have not been disturbed will take up more water, and the house in which this charming species is grown must of necessity be one well supplied with fresh air.

VANDA TERES.—If plants of this species are being grown in the position they require, in a hot house practically exposed to all sunshine, the flower spikes may well be developing. These terete-leaved plants will stand any amount of sun heat and moisture whilst in growth, but it is desirable to protect their beautiful flowers by shading them, and keeping the house drier whilst they are in bloom.

LÆLIA ANCEPS.—Plants of this and its many varieties, that require repotting or otherwise renovating, should now receive attention, for root action has already commenced. I favour pans in preference to baskets, as the plants are more easily potted when occasion requires. These should be well drained, using as compost good rough Osmunda fibre and sphagnum moss, placed firmly in the receptacles used. Give water sparingly for a

few weeks to newly potted plants, and an occasional syringing overhead on bright days will be beneficial. Afford plenty of light, and ample ventilation, in order to secure the best results. During the summer months they appreciate a supply of fresh air at all times.

GENERAL REMARKS.—Since my last notes the outside conditions have been of the worst possible nature for the well-being of Orchids grown under our artificial conditions. We have had spells of bright sunshine, followed by sleet and snow showers, which act with lightning effect upon inside temperatures, making it a difficult matter for those in charge of the fires to maintain that even temperature which is so essential to success. As growth will push on rapidly now, an effort should be made to keep abreast of it, so that everything may be done in its proper season, which is the whole secret of successful cultivation.

A DOUBLE CYMBIDIUM.—A remarkable double flower of Cymbidium Lady Colman is sent from the collection of H. T. Pitt Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood). It has no fewer than four lips, but from the double column and ovary, and the presence of ten sepals and petals in a complete circle, it is apparently only a fusion of two flowers, with an unusual development of the lip. As regards the latter character it is a little difficult to see what has happened, for there are three free lips in front of the double column and one behind it. A twin flower would have two lips placed side by side, and in front of the column. There are two in this position—which may represent the potential pair—and an additional one between them and the column, turned to one side for want of space, but all three are free to the base, and have the usual shape, colour, markings, and the pair of keels, but they are somewhat smaller than usual. The organ behind the column is a curious body, being a perfect half lip on one side, with a single keel, and a perfect half petal on the other. It springs from the junction of the two columns, which are completely confluent in front, though with a channel behind, from the base of which this additional organ arises. It is difficult to say what the two additional lips represent, because there are apparently no missing organs. It is a striking flower, but is probably only an accidental development. R.A.R.

A YELLOW ODONTOGLOSSUM.—A seedling Odontoglossum of exceptionally deep clear yellow colour has been raised by Messrs. J. & A. McBean, Cooksbridge. The parents were O. Fascinator aureum crossed with a clear yellow form of O. Adrianæ, and we do not remember to have previously seen a yellow of such intense and pleasing colour. This colour, of course, originally came from O. Hunnewellianum, which is concerned with O. crispum in the parentage of both the parents. R.A.R.

ODONTOGLOSSUM MACULATUM THOMPSONIANUM.

THE annexed figure represents a particularly fine variety of Odontoglossum maculatum, which was exhibited at a meeting of the Royal Horticultural Society by the late W. Thompson, Esq., Walton Grange, Stone, in July, 1901, and was awarded a First-class Certificate. It is characterised by the exceptional breadth of the segments, which gives the flower an almost perfect shape. The inflorescence bore eight flowers, over

Fig. 5. ODONTOGLOSSUM MACULATUM VAR. THOMPSONIANUM.

three inches across. The sepals are uniformly suffused with dark brown, the petals light yellow with a zone of dark brown blotches at the extreme base, and the blotches on the undulate lip are very regularly disposed. The figure is reproduced from a photograph of one of the flowers exhibited. In the typical form of the species the sepals are narrower and distinctly acuminate. The history of the species and that of the allied O. cordatum are given at pp. 43-44.

SOCIETIES.

ROYAL HORTICULTURAL.

A MEETING was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on January 28th, and was distinguished by a fine Gold Medal group from Messrs. Armstrong & Brown, one other medal group and one Award of Merit completing the awards.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), W. Bolton, F. J. Hanbury, R. G. Thwaites, Sir Harry J. Veitch, Pantia Ralli, C. H. Curtis, S. W. Flory, W. J. Kaye, C. J. Lucas, R. Brooman White, J. E. Shill, and R. A. Rolfe.

AWARD OF MERIT.

ODONTOGLOSSUM ARMAINVILLIERENSE VAR. REINE BLANCHE (crispum xanthotes × Pescatorei album).—A large and beautiful white variety, with a few light yellow spots on the lip. Exhibited by Dr. Craven Moore, Victoria Park, Manchester (gr. Mr. T. Arran).

GENERAL EXHIBITS.

Mrs. Norman Cookson, Oakwood, Wylam-on-Tyne (gr. Mr. Chapman), sent Cypripedium Oakwood Giant (Beeckmanii × Harold), an exceptionally large flower, having a broad, white dorsal sepal, lined with purple dots, and green at the base, and the broad petals flushed with purple above, and green below with brown dots.

F. J. Hanbury, Esq., Brockhurst, East Grinstead, showed Cypripedium Gasmirum (Gaston Bultel × mirum), with a green and white, well spotted dorsal sepal, and C. Major Hanbury Carlile (Troilus var. Amy Moore × Lady Carlisle), a very fine flower, well blotched with purple on the white dorsal sepal, and the broad petals yellow, spotted with brown below.

Dr. Miguel Lacroze, Bryndir, Roehampton (gr. Miss Robertson), showed Cypripedium Isonzo var. Bryndir (Alcibiades × Mrs. Wm. Mostyn), heavily blotched with red-purple on the white dorsal sepal, and the petals yellow tinged and spotted with brown.

Baron Bruno Schröder, The Dell, Englefield Green (gr. Mr. Shill), showed Cypripedium Eurybiades var. Helmuth, a very large and handsomely spotted flower, and Læliocattleya Schrœderæ, a beautiful white flower, with purple lip.

Messrs. Armstrong & Brown, Tunbridge Wells, received a Gold Medal for a large and handsome group of Odontoglossums, Odontiodas, and Cymbidiums, some well-grown Calanthe William Murray, C. Florence, and other Orchids, noteworthy among them being Cymbidium Moira var. elatior, bearing a spike of thirteen flowers, Odontoglossum Victory var. Marvel, clear white with claret red blotches, O. promerens var. Model,

heavily blotched with reddish purple, Odontioda Madeline var. Flamingo, deep yellow with red markings, and the graceful Cirrhopetalum gracillimum.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora Medal for a fine group, including many well-grown Odontoglossums and Odontiodas, among the former being Odontoglossum Radiant (Dora × Alexandræ), a charming thing, the flowers being white tinged with rose, and copiously blotched with purple. There were also some good Cattleyas, Læliocattleyas and others.

Messrs. Flory and Black, Slough, staged a small group, including Odontoglossum crispum Windsor, with large blotches of the Black Prince type, O. Portia (illustrissimum × Aglaon), Sophrocattleya Eva (Sc. Saxa × C. Enid), a pretty light rose hybrid, Sc. Nerissa (Sc. Saxa × C. Trianæ Backhouseana), rosy red, and Sophrocatlælia Iris (Lc. Thyone × Sc. Doris), a pretty yellow flower.

Messrs. J. & A. McBean, Cooksbridge, staged a small group, including good examples of Brassocattleya Bianca, Cattleya Trianæ alba, and C. Gen. Pulteney (Octave Doin × Trianæ).

At the meeting held on February 11th, there was a moderate display of Orchids, though the quality was excellent, and no fewer than six gained Awards of Merit, and one a Cultural Commendation.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), Arthur Dye, R. A. Rolfe, W. Bolton, F. J. Hanbury, R. Brooman White, C. J. Lucas, J. Charlesworth, C. H. Curtis, S. W. Flory, F. K. Sander, Pantia Ralli, and J. E. Shill.

AWARDS OF MERIT.

BRASSOCATLÆLIA IMOGEN (Lc. Trimyra × Bc. langleyensis alba).—A flower of model shape, the sepals and petals broad, of excellent substance, and clear white in colour, the lip also being white, neatly fringed and with a chrome yellow disc. Exhibited by Messrs. Flory and Black. It is figured at page 45.

ODONTOGLOSSUM CRISPUM THE MARQUIS.—A large and beautiful home-raised albino, with broad and prettily undulate petals and lip. Exhibited by Messrs. Charlesworth & Co.

ODONTOGLOSSUM EMPIRE (eximium × Marathon).—A large and finely-shaped hybrid, the flowers being curiously blotched with claret-red on the lower two-thirds, and the ground colour blush white. Exhibited by Messrs. Armstrong & Brown.

ODONTOGLOSSUM GATTON EMPEROR VAR. TIBERIUS (Lambeauianum × ?).— A richly-coloured hybrid, the flowers being almost uniformly violet purple, with blush white tips. Exhibited by Sir Jeremiah Colman, Bart.

ODONTOGLOSSUM RADIANT (Dora × Alexandræ).—A large and beautiful

variety, copiously spotted with dark claret-colour on a rosy mauve ground. Exhibited by Messrs. Charlesworth & Co.

ODONTOGLOSSUM ST. GEORGE (eximium × Alexandræ).—A fine hybrid, with a zone of mauve purple blotches, and the ground colour white. Exhibited by Messrs. Charlesworth & Co.

CULTURAL COMMENDATION.

CYMBIDIUM GOTTIANUM (insigne × eburneum).—To Mr. W. Farnes, gr. to Pantia Ralli, Esq., Ashtead Park, for a finely-grown plant bearing six spikes of flowers.

GENERAL EXHIBITS.

Baron Bruno Schröder, The Dell, Englefield Green (gr. Mr. Shill), sent three flowers of the handsome Cypripedium Eurybiades The Dell var.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a small group of choice things, including Odontioda Flambeau (Cooksoniæ × The Duchess), with bright cinnabar-red flowers, the dark scarlet O. Joan Orchidhurst var., O. Victory (Oda. Henryi × Odm. amabile), well spotted with maroon on a white ground and margined with violet, Odontoglossum Alcibiades, O. Columbine, and a few Cattleyas and Cymbidiums.

Messrs. Charlesworth & Co., Haywards Heath, sent a choice group of winter-blooming Orchids, noteworthy among them being Odontoglossum Faustina (Dora × eximium), having rich claret-coloured flowers, tipped and margined with lilac. A few brightly-coloured Odontiodas were also included.

Messrs. Flory & Black, Slough, showed three plants of the albino Cattleya Douai (intertexta alba × Suzanne Hye de Crom), also Odontoglossum Portia (illustrissimum × Aglaon), and O. Pallas (illustrissimum × Doris), two handsomely blotched hybrids.

Messrs. Sanders, St. Albans, sent Cymbidium Capella var. Orange Prince, a fine yellow variety; Odontioda St. Andre (Oda. Sanderæ × Odm. amabile), bearing a spike of well-shaped flowers, blotched with orange-scarlet on a yellow ground; a fine O. Euterpe, and several other good things.

At the meeting held on February 25th there was a particularly fine display, and the awards consisted of one First-class Certificate, four Awards of Merit, one Cultural Commendation, and four medals.

Orchid Committee present: Sir Harry J. Veitch (in the chair), J. O'Brien (hon. sec.), Arthur Dye, R. A. Rolfe, W. Bolton, C. J. Lucas, R. Brooman White, F. J. Hanbury, W. J. Kaye, Walter Cobb, J. Charlesworth, J. E. Schill, A. McBean, W. H. Hatcher, S. W. Flory, Pantia Ralli, E. R. Ashton, Stuart H. Low, Gurney Wilson, and C. H. Curtis.

FIRST-CLASS CERTIFICATE.

BRASSOCATTLEYA PRINCESS PATRICIA (C. Enid × Bc. Cliftonii

magnifica).—A superb hybrid, with broad, light rose sepals and petals, and the well-expanded lip rich purple in front, with a chrome yellow disc and the side lobes bright rose. Exhibited by Messrs. Charlesworth & Co.

AWARDS OF MERIT.

CYMBIDIUM ALBANENSE MCBEAN'S VAR. (erythrostylum × insigne).—A beautiful hybrid, bearing a spike of seventeen, blush-white flowers, the lip bearing lines of numerous purple dots. Exhibited by Messrs. J. & A. McBean.

CYMBIDIUM INTERNATIONAL (Veitchii × Woodhamsianum).—A fine hybrid, having primrose yellow sepals and petals with light reddish lines, and the lip with a zone of chestnut red in front, and some paler markings behind. Exhibited by Messrs. Armstrong & Brown.

LÆLIOCATTLEYA REX (Lc. Haroldiana × C. Tityus Rex).—A finely-shaped and richly-coloured hybrid, the broad sepals and undulate petals bright rosy mauve, and the lip ruby purple with yellow veining on the disc. Exhibited by Messrs. Flory & Black.

LÆLIOCATTLEYA ZENA (Lc. St. Gothard × C. Luegeæ).—A charming hybrid, with very broad rose-coloured sepals and petals, and the undulate lip rich purple with some yellow veining at the base. Exhibited by Messrs. Charlesworth & Co.

CULTURAL COMMENDATION.

. CYMBIDIUM LOWIO-GRANDIFLORUM.—To Mr. J. Collier, gr. to Sir Jeremiah Colman, Bart., for a splendidly-grown plant bearing an inflorescence of twenty-nine flowers.

GENERAL EXHIBITS.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), sent a good plant of Dendrobium Pink Pearl, a delicately coloured hybrid, and Odontoglossum Gatton Princess (Queen of Gatton × eximium), with finely blotched flowers.

Sir Mervyn E. M. Buller, Broomhill, Spratton, Northampton (gr. Mr. Kench), sent Cattleya Clotho splendens and C. Trianæ alba Broomhill var.

Dr. Miguel Lacroze, Bryndir, Roehampton (gr. Miss Robertson), sent Læliocattleya Beatrice var. Roehampton, a richly-coloured form.

Mr. R. A. Rolfe exhibited the plant of Odontoglossum Humeanum (maculatum × Rossii), whose history was given at pp. 4-6. The plant bore an inflorescence of four flowers. It was also exhibited at the meeting of the Scientific Committee, and was awarded a Certificate of Appreciation in recognition of the experiment which has solved the parentage of this interesting natural hybrid.

Messrs. Armstrong and Brown, Tunbridge Wells, received a Silver-gilt Flora Medal for a large and handsome group, in which numerous Odontoglossums, Odontiodas and Cymbidiums were very effective. Noteworthy among them were Odm. Nora leopardinum, with densely blotched flowers,

O. Alcantarn Orchidhurst var., O. Doris Orchidhurst var., very prettily spotted, Odontioda Flambeau (Cooksoniæ × The Queen), Cymbidium Alexanderi roseum, C. Goldflake (rosefieldiense × glebelandense), with bronzy yellow flowers, C. Beryl var. Rajah, greenish yellow with a zone of red brown on the lip, and others.

Messrs. Charlesworth and Co., Haywards Heath, received a Silver-gilt Flora Medal for a choice group of showy hybrids, including the fine purple Eulophiella Rolfei, some good Cattleyas and Læliocattleyas, Odontioda Alcides (Lambeauiana × Royal Gem), O. Garnet (Oda. keighleyensis × Odm. eximium), O. Lydia (C. Nœtzleana × O. Jasper), O. Mena (Oda. Lambeauiana × Odm. eximum), O. Valda (Odm. Louise × Oda. Coronation), Odontoglossum Marcus (Jasper × Harryanum), O. Orestes (Dora × percultum), O. Orosius (Solon × Maillardianum), and numerous others, both white and blotched. There were also half-a-dozen spikes of a hybrid Disa from D. grandiflora × Blackii, varying greatly in colour, and one of them with a light blush dorsal sepal.

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver Flora Medal for an excellent group, including some good Cattleyas, Læliocattleyas and Odontoglossums, beautiful examples of Phalænopsis Schilleriana and amabilis, some well-flowered Sophronitis grandiflora, Sophrolælia Psyche, Lælia anceps Roeblingiana, Cattleya Percivaliana Little Gem, and others.

Messrs Hassall & Co., Southgate, received a Silver Banksian Medal for a group of well-flowered Cymbidiums, with examples of Miltonia Bleuana, Sophrocattleya Thwaitesiæ, and a few Cypripediums.

Messrs. Flory & Black, Slough, showed Sophrocatlælia Vera (S. grandiflora × Lc. Charlesworthii), a brightly-coloured flower, Odontioda Lambeauiana var. Nellie, a well-coloured form, and the richly-coloured Cattleya Tityus var. Rex.

Messrs. J. & A. McBean, Cooksbridge, staged a small group of well-flowered Cymbidiums and Odontoglossums, Læliocattleya Emmeline (L. anceps Schrœderæ × C. Whitei), and pretty hybrid of intermediate character, and a few others.

At the Meeting held on March 11th, Orchids were numerous and of excellent quality, and the awards consisted of one First-class Certificate, three Awards of Merit, two Preliminary Commendations, and six Medals.

Orchid Committee present:—Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec)., W. Bolton, W. H. White, Arthur Dye, R. A. Rolfe, R. G. Thwaites, Sir Harry J. Veitch, Pantia Ralli, C. H. Curtis, J. Charlesworth, S. W. Flory, T. Armstrong, R. Brooman White, C. J. Lucas, James Whitton, F. K. Sander, E. R. Ashton, J. Wilson Potter, Stuart H. Low, G. Wilson, and F. J. Hanbury.

FIRST-CLASS CERTIFICATE.

BRASSOCATTLEYA GATTON LILY VAR. PURITY (C. Trianæ albens × Bc. langleyensis var. Fortuna).—A beautiful albino, with a light yellow disc to the lip. Exhibited by Sir Jeremiah Colman, Bart.

AWARDS OF MERIT.

ODONTOGLOSSUM MAURETANIA (Rolfeæ majesticum × percultum var. Olympia.—A large and handsome hybrid, having light yellow sepals and petals, prettily blotched with purple red, and the broad, flat lip white, with purple markings in front of the yellow crest. Exhibited by Messrs. Charlesworth & Co.

ODONTOGLOSSUM PEERLESS AURIFERUM ROSSLYN VAR. (Ossulstonii × eximium).—A distinct and handsome form, having primrose yellow segments, spotted with deep brownish red. Exhibited by H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood).

ODONTOGLOSSUM PYRAMUS (Louise × l'Empereur).—A handsome thing, with flowers of excellent shape, and handsomely blotched with reddish claret on a lighter ground. Exhibited by Messrs. Charlesworth & Co.

PRELIMINARY COMMENDATIONS.

ODONTIODA LADY PATRICIA RAMSEY (Odm. Lambeauianum × Oda. Coronation).—A very promising hybrid, the broad segments being ruby red, shading off to rose at the margin. Exhibited by Messrs. Armstrong & Brown.

ODONTOGLOSSUM GENERAL FOCH ORCHIDHURST VAR. (Armstrongiæ × Colossus).—A very fine form, with flowers of good shape, well blotched with purple-red on a white ground. Exhibited by Messrs. Armstrong & Brown.

GENERAL EXHIBITS.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), received a Silver Flora Medal for a choice group, including a fine specimen of Dendrobium speciosum var. nitidum, some well-bloomed D. Lady Colman, D. chessingtonense, D. Rolfeæ roseum, and others; also good specimens of the dwarf Epidendrum polybulbon, the remarkable Megaclinium purpureorachis, Bulbophyllum tremulum with several spikes, a pan of the pretty white Cynorchis compacta, and well-bloomed examples of Sarcochilus Fitzgeraldii and S. Hartmannii; these botanical gems being staged separately.

A. E. Flaver, Esq., South Norwood, (gr. Mr. Rogers), received a Silver Flora Medal for a good group of Cymbidiums, with well-bloomed examples of Sophronitis grandiflora, and a few others.

H. S. Goodson, Esq., Fairlawn, Putney (gr. Mr. Day), sent a plant of Odontoglossum Goodsonianum, a pretty O. Rossii hybrid.

H. T. Pitt, Esq., Rosslyn, Stamford Hill, (gr. Mr. F. W. Thurgood), sent Odontoglossum Ruby King, and Cymbidium Lady Colman Rosslyn var.

Pantia Ralli, Esq., Ashtead Park (gr. Mr. Farnes), sent Sophrocatlælia Ralliæ (Scl. Marathon × C. Trianæ), with two richly-coloured flowers.

Messrs. Armstrong & Brown, Tunbridge Wells, received a Silver Flora Medal for a fine group, consisting largely of Odontiodas and Odontoglossums, with Miltonia St. Andre, and a few good Cymbidiums and Læliocattleyas, noteworthy examples being Odontoglossum Commander Ramsey, a richly-coloured hybrid, Odontioda Amethyst var. rubrocœrulea, O. Cupid, and forms of the hybrid from Odontoglossum nævium and Odontioda Charlesworthii.

Messrs. Charlesworth & Co., Haywards Heath, gained a Silver Flora Medal for a choice group, including many brilliant Odontoglossums and Odontiodas, a richly-coloured Sophrocatlælia Meuse, Cypripedium Venus, some good Læliocattleyas, &c. Noteworthy plants were: Odontioda Joan var. Harlequin, bright yellow with lines of red spots, the handsome Odontoglossum St. George, a fine O. crispum xanthotes, O. Gorizia, and others.

Messrs. J. & A. McBean, Cooksbridge, were awarded a Silver Flora Medal for a beautiful group, including examples of Cattleya Cowaniæ alba, Brassocattleya Leemaniæ, Odontioda Sensation var. Perfection, a well-bloomed O. Floryi, O. Brewii, Oncidium McBeanianum, and many well-grown Odontoglossums and Cymbidiums.

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver Banksian Medal for a brilliant little group, including well-bloomed examples of Sophronitis grandiflora, Sophrocatlælia Marathon, Læliocattleya Ballii, Phalænopsis Stuartiana, Cattleya Enid, the rare Oncidium cucullatum, and a number of Cypripediums and Dendrobiums.

Messrs. Flory & Black, Slough, sent Sophrocatlælia Margrand (Scl. Marathon × S. grandiflora), orange-scarlet, with a crimson-margined lip, Scl. Beta, Odontoglossum Pallas (illustrissimum × Doris), light purple with numerous dark purple spots, O. Portia (illustrissimum × Aglaon), a handsomely blotched hybrid, a seedling of the O. crispum Black Prince type, and several others.

At the meeting held on March 25th, there was a fine display of Orchids, and the awards consisted of four medals, three Awards of Merit, and two Preliminary Commendations.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the chair), J. O'Brien (hon. sec)., W. Bolton, W. H. White, Arthur Dye, Sir Harry J. Veitch, C. J. Lucas, J. Charlesworth, W. H. Hatcher, E. R. Ashton, Pantia Ralli, T. Armstrong, A. McBean, F. K. Sander, Walter Cobb, Stuart H. Low, S. W. Flory, F. J. Hanbury, and R. A. Rolfe.

AWARDS OF MERIT.

LÆLIOCATTLEYA QUEEN MARIE (Lc. Goldfinch × C. Empress Frederick).—A handsome hybrid, most resembling the Cattleya parent in

shape, and having rose-coloured sepals and petals, and the lip ruby-purple, with two yellow blotches in the throat, and some yellow veining on the disc. Exhibited by Sir Jeremiah Colman, Bart.

ODONTIODA ST. ANDRE (Oda. Sanderæ × Odm. amabile).—A charming thing, the flower being of excellent shape, and the colour brilliant scarlet red with bright yellow reticulated lines, with some mottling on the lip. Exhibited by Messrs. Sanders.

ODONTOGLOSSUM VARDAR (mirificum × eximium).—A handsome thing, the sepals and petals heavily blotched with claret-red on a white ground, and the very broad lip blotched with purple in front of the yellow crest. Exhibited by Messrs. Flory & Black.

PRELIMINARY COMMENDATIONS.

ODONTIODA CYCLOPS (Oda. Bradshawiæ × Odm. Mars).—A very promising hybrid, having broadly rounded, undulate sepals and petals, deep salmon-red in colour with an interrupted white margin, and a broadly cordate, lilac lip, with a large red area round the yellow crest, and a rosy band near the margin. Exhibited by Messrs. Armstrong & Brown.

ODONTOGLOSSUM PALLAS (illustrissimum × Doris).—An attractive hybrid, the flowers being of excellent shape, and the segments heavily blotched with claret-purple, leaving a network of narrow white lines. Exhibited by Messrs. Flory & Black.

GENERAL EXHIBITS.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), staged a very attractive group, including well-bloomed plants of Dendrobium Cybele and D. Gatton Monarch (Lady Colman × nobile var. Harefield Hall), two examples of Sophronitis grandiflora, the brilliant Sophrocatlælia Mary, Sophrolælia Marriottiana and its bright yellow variety aurea, a well-bloomed Sarcochilus Hartmannii, and other good things.

E. R. Ashton, Esq., Broadlands, Tunbridge Wells, staged a small group of Odontoglossums and Odontiodas, in which we noted a brightly-coloured Odontoglossum triumphans and a dark purple form of Odontioda Joan.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), showed Miltonia Bleuana Hessle var., bearing two spikes of flowers, the colour being blush white, with a purple mask on the lip.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora Medal for a fine group, including examples of Odontoglossum crispo-Solon, a particularly fine thing, the very round flower having a broad zone of purple at the base of the segments, O. crispum xanthotes, two good examples of Miltonia Venus, the bright yellow Brassocatlælia Joan, Sophrocatlælia Meuse with four brilliant flowers, the rare Cœlogyne Sanderæ, a brilliant form of Odontioda Schrœderi, the very round yellow flowers having a large

orange-red blotch at the base of each segment, forms of O. Charlesworthii, Bradshawiæ, Gladys, and others, and a cut spike of Disa Italia with five flowers, the lateral sepals red, passing to greenish at the apex, and the dorsal sepal much lighter in colour.

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver Banksian Medal for a bright and pretty group, including some well-flowered Sophronitis grandiflora and its hybrids, examples of Læliocattleya luminosa aurea, Dominiana and Ballii, Odontoglossum Wiganianum, the handsome Cattleya Cyrus, a selection of Cypripediums, the deep yellow Dendrobium chessingtonense, and several other well-bloomed Dendrobiums.

Messrs. J. & A. McBean, Cooksbridge, received a Silver Banksian Medal for a small group, including a few good Cymbidiums, Odontioda Diana, O. Charlesworthii, and a richly-coloured O. Goodsoniæ, good forms of Læliocattleya Beatrice, Cattleya Cowaniæ alba, and others, and an interesting novelty in Adoglossum nanum (Ada. aurantiaca × Odontoglossum Phœbe), most like the Ada parent in general character, but with more open flowers, which are orange-yellow with a few brown dots.

Messrs. Sanders, St. Albans, received a Silver Banksian Medal for an interesting group, including the rare Odontoglossum nævium, a good form of Odontioda brugensis, Cattleya Snow Queen, Odontioda Rajah (Odm. Rio Tinto × Oda. Lambeauiana), having dark violet flowers with some white markings, a good O. Zephyr, and several others.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a select group, including a well-grown Sophronitis grandiflora with eighteen flowers, Odontoglossum Ajax (amabile × promerens), a fine thing, prettily spotted with claret-red on a light yellow ground, O. Ajax var. Armstrongiæ, having broader white segments with a zone of ruby-red blotches, Odontioda Jupiter (Oda. Coronation × Odm. eximillus), heavily marked with claret-red on a white ground, O. Ariadne (Oda. Coronation × Odm. Conqueror), most like the Odontioda parent in general character, and a few others.

Messrs. Flory & Black, Slough, showed an interesting novelty in Cattleya Princess Ilene (C. Myra Peeters × Lueddemanniana alba), white with a light yellow disc to the lip.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

A meeting was held at the Coal Exchange, Manchester, on February 6th, when the members of Committee present were:—The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. Cypher, J. Howes, A. Keeling, D. McLeod, E. Rogers, J. Benstead and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Lycaste Skinneri vars. Rainbow and The Gem, from Mrs. Bruce and Miss Wrigley.

Cypripedium Queen of the Belgians var. majesticum, from S. Gratrix, Esq.

AWARDS OF MERIT.

Odontioda Hippolyta (Oda. Charlesworthii × Odm. armainvillierense), Cypripedium Lord Wolmer var. Emperor, Odontoglossum crispum Louis Sander, Brassocattleya Mary Gratrix, and Dendrobium Fairy Queen (Rolfeæ × Wiganiæ), from S. Gratrix, Esq.

Odontoglossum Chas. Frencham (amabile × Rolfeæ), from the Hon. Robert James.

Cypripedium Olympus var. Don Juan (Alcibiades × Leeanum Clinkaberryanum), from T. Worsley, Esq.

FIRST-CLASS AWARD OF APPRECIATION.

Odontioda Earl Kitchener (Oda. Bradshawiæ × Odm. Rolfeæ), from S. Gratrix, Esq.

A Large Silver-gilt Medal was awarded to S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), for a fine group of Cypripediums, Odontoglossums, Dendrobiums, and Brassocattleyas, with an example of Lycaste Imschootiana Chorltonii, and others.

Silver Medals were awarded to Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. E. Rogers), and to Messrs. Cypher and Sons, Cheltenham, for fine groups of winter-blooming Orchids.

Interesting exhibits were staged by T. Worsley, Esq., Haslingden, (gr. Mr. Tom Wood); The Hon. Robert James, Richmond, (gr. Mr Benstead); R. Ashworth, Esq., Newchurch (gr. Mr. Hough); Mr. W. Shackleton, Bradford; and Mr. D. McLeod, Chorlton.

At the meeting held on February 20th, the members of Committee present were:—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, D. A. Cowan, J. C. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, J. Lupton, D. McLeod, W. Shackleton, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Odontoglossum crispum Fowmum (Fowlerianum × Mundyanum), one of the best hybrid crispums raised (a Silver Medal being also awarded), and Læliocattleya Eunice alba Haddon House var. (L. anceps alba × C. chocoensis alba); from P. Smith, Esq.

Cattleya Trianæ Samuel Gratrix, a very fine form, from S. Gratrix, Esq.

Odontoglossum eximium Alpha, a heavily blotched variety, from Dr. Craven Moore.

AWARDS OF MERIT.

Dendrobium Mrs. T. B. Haywood, and D. Melpomene magnificum, Odontoglossum Rossimium (Rossii rubescens × eximium), harvengten-excellens; and Cypripedium Conference var. Imperator, from S. Gratrix, Esq.

Odontoglossum Luptonii (Edwardii × armainvillierense), from Col. Sir John Rutherford, Bart., M.P.

CULTURAL CERTIFICATES.

To Mr. J. Howes, for Dendrobium, Mrs. T. B. Haywood, D. Melpomene magnificum, and Cattleya Trianæ Samuel Gratrix.

A Silver-gilt Medal was awarded to S. Gratrix, Esq., Whalley Range, (gr. Mr. Howes), for a fine group of Cypripediums, Dendrobiums, Odontiodas, and Cattleyas, several of which figure in the list of awards.

Interesting exhibits were staged by P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson); Dr. Craven Moore, Victoria Park, Manchester (gr. Mr. T. Arran); Col. Sir J. Rutherford, Bart., M.P. Blackburn (gr. Mr. J. Lupton); Mr. D. McLeod, Chorlton; and Mr. W. Shackleton, Bradford.

The Secretary regrets to report the death of Mr. E. Rogers, grower to Mrs. Bruce and Miss Wrigley, and to the late O. O. Wrigley, Esq., Bury, one of the most useful and enthusiastic members of the Society from its inception.

At the meeting held on March 6th, the members of Committee present were: The Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, D. A. Cowan, J. C. Cowan, J. Cypher, A. Hanmer, J. Howes, A. Keeling, D. McLeod, J. Thrower, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATE.

Lycaste Skinneri var. Pax; from Mrs. Bruce and Miss Wrigley.

AWARDS OF MERIT.

Odontoglossum Ossulstonii var. The Wonder (spectabile × Pescatorei), and Lycaste Skinneri var. Cazador; from Mrs. Bruce and Miss Wrigley.

Odontoglossum Telemachus Sanders' var. (excellens × harvengtense), Odontioda Rajah (Odm. Riò Tinto × Oda. Lambeauiana); from Messrs. Sanders.

Large Silver Medals were awarded to Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. E. Burns), and to S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), for very fine groups, the former being strong in Cypripediums, and the latter in Odontoglossums and Dendrobiums, while both included some finely-grown Lycaste Skinneri.

Messrs. Cypher and Sons, Cheltenham, were awarded a Silver Medal for a fine group, which was brightened up with some well-bloomed plants of Sophronitis grandiflora, Masdevallia Heathii, M. Chamberlainii and M. Hincksiana.

Mrs. Gratrix, Whalley Range (gr. Mr. J. Howes), showed a plant of the interesting Cirrhopetalum picturatum.

Messrs. Sanders, St Albans, sent a few good Odontoglossums and Odontiodas.

At the meeting held on Thursday, March 20th, 1919, the members of Committee present were: Rev. J. Crombleholme (in the chair), Messrs. A. Burns, J. C. Cowan, J. Cypher, A. Hanmer, J. Howes, A. Keeling, D. McLeod, J. McNab, W. Pickup, W. Shackleton, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Brassocattleya Cowanii (Thorntonii × Maronii), a very handsome, well-set flower of almost perfect shape, and Odontioda highfieldensis superba (Odm. crispum Luciani × Oda. Schrœderæ); from P. Smith, Esq.

Cypripedium Mrs. Wm. Pickup (Thisbe × Alcibiades Illustrious). Perhaps the finest Cypripedium that has yet been seen in the North of England; a huge well-proportioned flower, with round dorsal sepal, $3\frac{3}{4}$ inches across, yellow madder at base, shaded to crimson and with white margin; petals $1\frac{3}{4}$-in. wide; mahogany yellow, with dark line down the centre; pouch mahogany-crimson (a Silver medal was also awarded); from Wm. Pickup, Esq.

AWARDS OF MERIT.

Odontoglossum Pickupiæ (Pescatorei × ?), O. Conqueror var. Lily, and Odontioda Royal Gem var. violacea; from Wm. Pickup, Esq.

Dendrobium Gratrixianum (Wiganianum × Artemis), a fine hybrid; from S. Gratrix, Esq.

Odontoglossum Doreen var. magnificum (eximium × Empress of India); from P. Smith, Esq.

FIRST-CLASS BOTANICAL CERTIFICATE.

Masdevallia Wallisii stupenda; from S. Gratrix, Esq.

CULTURAL CERTIFICATE.

To Mr. J. Howes, Dendrobium nobile var. West Point.

A Silver-gilt Medal was awarded to S. Grairix, Esq., Walley Range, (gr. Mr. J. Howes), for a fine group of Dendrobiums, Cattleyas, and Odontoglossums, with a few other good things.

A Large Silver Medal was awarded to Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury (gr. Mr. A. Burns), for a fine group, in which Cypripediums, Lycastes and Odontoglossums were well represented, with a few other good things.

A Silver Medal was awarded to Messrs. Cypher & Sons, Cheltenham, for a fine group of winter-blooming Orchids, in which a few good Cymbidiums were conspicuous.

Interesting exhibits were staged by Wm. Pickup, Esq., Great Harwood, (gr. Mr. P. Mercer); P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson); and Mr. W. Shackleton, Bradford.

ORCHID NOTES AND NEWS.

Meetings of the Royal Horticultural Society are announced to be held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on March 11 and 25, April 8 and 29, and May 13, when the Orchid Committee will meet at 11.45 a.m. The succeeding meeting has been provisionally arranged as a great Spring Show to be held at Chelsea, on May 20, 21 and 22, in aid of the Wisley Endowment Trust Fund. Further definite arrangements are to be announced.

On June 24 and 25, will be held a Floral Fete and Exhibition in the Chelsea Gardens, in aid of the R.H.S. War Relief Fund, the object of which is to assist in restoring the Gardens and Orchards of our Allies, which have been so ruthlessly destroyed. It is proposed that the general arrangements shall be on the same lines as the Chelsea Show of a month earlier, and it is hoped that Her Majesty, Queen Alexandra, and several other Members of the Royal Family will be present during the Fete. The arrangements have been entrusted to Mr. W. A. Bisset. Offers of plants or cut flowers to be sold for the benefit of the Fund will be gratefully received. Further particulars are to be announced.

Last year a Flower Fair was held in Trafalgar Square, under the Presidency of the Duke of Portland, K.G., in aid of the British Ambulance Committee. Orchid flowers were sent by the Duke of Marlborough, Lt. Col. Sir George L. Holford, Sir Jeremiah Colman, Bart., Col. Sidebotham, Mrs. Norman C. Cookson, Mrs. F. M. Ogilvie, Mr. Walter Cobb, Mr. S. Gratrix, Mr. James Watson, Mr. C. J. Phillips, and Mr. F. Swanzy. A fine lot of roses was sent from the Royal Gardens at Windsor. The result was a substantial addition to a very worthy Fund.

The remaining meeting of the year of the Manchester and North of England Orchid Society are fixed for March 6 and 20, April 3 and 17, and May 8, and on the latter date the Annual General Meeting will be held. The Committee meets at noon, and the exhibits are open to inspection from 1 to 4 p.m.

ORCHIDS IN BELGIUM.—We learn from M. Th. Pauwels, Meirelbeke, that on February 21st he had the honour of a visit from His Majesty, King Albert, the object being to see his devasted Nursery, of which it will be remembered that an account was given at pp. 22, 23, of our last issue.

THE LATE M. JULES HYE DE CROM.—At the meeting of the R.H.S. Orchid Committee held on January 14th, the Chairman, Sir Jeremiah

Colman, Bart., read a letter, dated October 26th, 1918, from Madame Jules Hye de Crom, thanking the Committee for the letter of condolence sent on February 11th, 1915, which she had only then received, all letters having been detained by the Germans. Madame Hye remarked on the pleasure taken by her late husband in visiting and taking part in the exhibitions of the Royal Horticultural Society. After considerable difficulty with the enemy, which affected his nervous temperament, the end came suddenly from heart trouble. It is probable that the collection of Orchids will be disposed of.

MESSAGE TO BELGIAN HORTICULTURISTS.—At the meeting of the R.H.S. Orchid Committee, held on March 11th, the following resolution was passed, on the motion of Sir Jeremiah Colman, Bart.: "We, the Chairman and Members of the Orchid Committee of the Royal Horticultural Society, wish to convey greetings and good wishes to our friends in Belgium upon the determination of the cruel War, and to assure them of our heartfelt sympathy with their country's sufferings so nobly borne, and our admiration of King Albert, Queen Elisabeth, and their countrymen in their sacrifice for right against might. We deplore personal losses caused by the War, and express the hope that the Orchid Collections of Belgium may be restored speedily to their former greatness." Sir Harry J. Veitch undertook to forward the resolution to the recognised Horticultural Centres in Belgium.

Another part of the Journal of the Royal Horticultural Society has just appeared, containing articles on a wide range of subjects, though Orchidology is limited to the Report of the Orchid Committee for the last half of 1918, and a few Notes and Abstracts. In the latter we find notes on two *Botanical Magazine* figures, on Orchids in the Open, and on Cymbidium ensifolium, the latter said to be grown extensively in China, and to be regarded as the Queen of flowers. The *Orchid Review* is again ignored, which is not for want of materials nor yet of the Journal itself, for we have regularly presented it to the Society for twenty-six years, and we find it regularly included in the List of Works from which it is alleged that abstracts are made.

The current issue of the Journal of the Kew Guild contains numerous letters and records of the doings of Kewites throughout the world. Under the heading of "Four years in Germany" is an account, by Mr. Guy Neville, of his experiences at the British Prisoners of war Camp at Ruhleben, and M. Louis Gentil writes of the Brussels Botanic Garden, remarking that it would fill several copies of the Journal to recall all the mischief done by the German occupation. Seven houses had to be emptied on account of shortage of coal, and the general collection of plants has been considerably reduced.

The French language was prohibited, and all the labels of the trees and shrubs were taken off because the French name of the plant was mentioned.

CYPRIPEDIUM MEDUSA.—A flower of this pretty little hybrid, derived from C. Godefroyæ leucochilum × Euryades New Hall Hey var., is sent from the collection of G. Hamilton Smith, Esq., Northside, Leigh Woods, Bristol, by Mr. W. E. Walker. It is most like the former in shape, having broad sepals and petals, which are cream yellow, regularly blotched with dark brown, the blotches being rather large, especially on the dorsal sepal. It should develop into a good thing.

ODONTOGLOSSUM GOVERI.—This is a new and very pretty hybrid, raised in the collection of R. G. Thwaites, Esq., Chessington, Streatham Hill, from O. maculatum crossed with the pollen of O. Chieftain (Rolfeæ × Vuylstekei). The upper part of a spike of five flowers is sent, and it is interesting to see the way the characters have been combined. The flowers are of good shape, and the sepals and petals light yellow, with a number of red-brown spots; the front lobe of the lip is orbicular, prettily crisped, and pure white, the yellow crest strongly four-lobed, and behind it are four bright red-brown lines. The column is most like O. maculatum, and has narrow, slightly toothed wings. It is dedicated by request to Mr. F. Gover, an enthusiastic Orchidist, who has now charge of the collection.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

C.W.P.—We have pleasure in reporting on further specimens, as follows: 14 and 20, male and female flowers of Cycnoches Dianæ, Rchb. f.; 16, Cattleya Deckeri, Klotzsch; 17, Epidendrum stenopetalum, Hook; 25, Brassavolanodosa, L.; 26, Oncidium iridifolium, Kunth; 27, Xylobium Stachyobiorum, Hemsl.; 30 and 43, Epidendrum fragrans, Swartz: 33, E. Stamfordianum, Batem.; 35, 36 and 42, E. nocturnum, L.; 39, Aspasia principissa, Rchb.f.; 44, Trigonidium Seemannii, Rchb. f.; 52, Lockhartia pallida, Rchb. f.; 53, Oncidium ampliatum, Lindl.; 60, Catasetum Warscewiczii, Lindl. (C. scurra, Rchb. f.); 64 Lælia rufescens, Lindl.; 65, Trichopilia coccinea, Lindl.: 66, T. marginata, Henfrey (a variety of the preceeding); 67, Diacrium bilamellatum, Hemsl.; 68, Hexisia bidentata, Lindl.

J.C.—The seeds might be sown at once on the compost of the parent plant, and on one or two others where the compost is in good condition.

Photographs received, with thanks,—C.W.P.; C.H.L.

Erratum.—The name of the fine specimen of Cymbidiella given as the frontispiece of our last volume should be corrected to C. Humblotii. The error is unexplicable, as the name is correctly given at page 239.

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VOL. XXVII. MAY—JUNE, 1919. NO. 317-318

THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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The Orchid Review

VOL. XXVII. MAY-JUNE, 1919. NO. 317-318.

ORCHID CULTURE IN PANAMA.

A SERIES of four interesting photographs has been sent by Mr. C. W. Powell, Panama, representing views in his Orchid Collection at Balboa, in the Canal Zone. An account of the collection has already been given (*O.R.*, xxvi. pp. 179-181); and these views enable one to realise better the conditions of Orchid culture in the tropics, where one can dispense with glass and artificial heat. The place might be described as a large, open shed, supported by pillars, and with a light canvas covering to protect the plants from the burning rays of the sun. Some of the plants are grown in pots on a stage, but the majority are in baskets or on wood blocks, and suspended from the supports and roof of the house, while strong plants of Vanilla climb up some of the supports. We note a good plant of a white Trichopilia in bloom, and many of the details can be made out with the aid of a lens, but the scale is such that they would be lost in a half-tone illustration. At the same time Mr. Powell sends a good photograph of the beautiful Trichopilia suavis, and another of a Warscewiczella, and we have others, accompanied by good dried specimens on which we hope to report at the earliest opportunity.

Respecting Panama as a possible centre of Orchid culture, Mr. Powell remarks: "Why does not one of the big Orchid firms establish propagating gardens on the Isthmus? Here is the neck of the hour-glass of shipping routes, all Mexican, Central and South American travel or commerce passes through the Canal, going back or forth. This would make it easy for the gathering together here of the plants of all America, and as Japan is running a regular line here, those of the Orient also. The gardens so established could thus supply the home firms with a constant supply of plants, shipped at just the proper time and under the proper conditions to reach London in good condition. The question of hybridising would be exceedingly simple, as all the natural conditions of growth are here, and plants would be plentiful to experiment with. Besides, there are thousands of ferns, lilies, and other tropical flowering plants of great beauty which could be handled.

Of course, it would be necessary that a first-class man should be sent out, one who knows plants when he sees them, and how to handle them. He could also make short collecting trips to neighbouring countries at the proper season to obtain the best results. Labour could be had here at comparatively moderate cost, and the living conditions are as good and healthful as anywhere in the world.

Mr. Powell encloses a list of shipping routes both east and west from the Isthmus, either weekly or fortnightly, these being regular sailings by established terminal lines, while there are many passing ships that can also be used for transport. He also encloses a number of cuttings of climatic and weather conditions of a country which promises large developments in the future, owing to the successful cutting of the Panama Canal.

VARIATION IN ODONTOGLOSSUM CRISPUM.

THE extreme variability of the popular Odontoglossum crispum has been many times remarked upon, and it is now pretty generally understood to be largely due to intercrossing with several other species with which it grows intermixed. But when it comes to finding the dividing line between O. crispum, and its hybrids the trouble begins. We have many times been asked whether certain blotched forms could properly be regarded as O. crispum without being able to give a satisfactory answer, and this applies both to blotched and yellow forms, though some of them can be picked out by characters that have obviously been derived from other species which grow in the same area. It is by this combination of characters that any natural hybrid can be recognised, for nature keeps no other records, and reversions necessarily pass as individuals of the pure species.

O. crispum is usually regarded as the most variable Orchid in existence, but this is probably because of the freedom with which it hybridises with other quite distinct species with which it grows, and the existence of a host of intermediate forms which cannot be separated by any definite line. O. gloriosum, Lindleyanum and luteopurpureum would at first sight seem so different from O. crispm that no one would think of confusing them, yet forms intermediate between them and O. crispum began to appear in almost the earliest importations. That these intermediates were of hybrid origin was recognised from the outset, but they passed into O. crispum by such a chain of connections that the natural limits were obscured, and the forms most resembling O. crispum were for simple convenience described as varieties of it.

Typical O. crispum may be described as a white or blush-white species, with broad, unblotched or sparsely blotched sepals and petals, while O.

gloriosum, Lindleyanum, and luteopurpureum have a yellow ground with narrower sepals and petals, and large or numerous brown blotches. True, there are forms approximating to the crispum shape which have a light yellow ground colour, and others with large or numerous blotches, but there are grounds for believing that both characters represent the remains of hybridity, for there are gradations in shape and in the nature of the blotching.

As regards tbe latter point, confirmatory evidence has appeared among importations. O. crispum had been imported in enormous quantities for upwards of thirty years, when it was discovered in a new district, in company with O. Hunnewellianum, another yellow and brown species of quite different character, and among them the corresponding natural hybrid, O. Adrianæ, and a set of blotched forms of a distinct type, which are also placed among blotched crispums on account of the difficulty of separating them.

Experimental evidence on the subject is now, fortunately, available. The hybrid origin of O. Adrianæ has been proved by crossing O. crispum with O. Hunnewellianum; O. Adrianæ has been recrossed with O. crispum, by Messrs. Charlesworth & Co., yeilding the hybrid known as O. Fascinator (*O.R.*, xiii. pp. 201, 203, fig. 43); and now we have a hybrid from O. Fascinator again crossed with the blotched O. crispum var. Lucianii, raised by Messrs. Armstrong & Brown, and flowered in 1916 (*O.R.*, xxiv. pp. 132, 155). This has a light yellow ground with large red-brown blotches, but most approximates to O. crispum in shape. One of the seedlings received a Preliminary Commendation from the R.H.S., and we should much like to know the range of variation shown among other seedlings from the same batch. M. Peeters repeated the cross O. Adrianæ with a blotched O. crispum, and obtained forms with white, rose, light and dark yellow ground, and with an equally wide range of variation in the size, number and colour of the spots, showing various degrees of reversion to the original species. We had the pleasure of seeing them, and remarked that "it would seem incredible, without positive evidence, that such diverse forms could have come out of the same capsule of seed" (*O.R.*, xvi. p. 196). We hope to hear the result of other experiments. R,A.R.

MESSAGE FROM BELGIAN ORCHIDISTS.—At the meeting of the R.H.S. Orchid Committee held on April 29th, a reply was read from M. Firmin Lambeau, President of the Belgian Orchid Society, in response to the message of greetings and good wishes sent by the Committee on March 11th (see page 67), the substance being as follows: "I have had the honour of communicating to the Council of Administration of the Belgian Orchid Society the motion which your Committee has kindly sent me. My

colleagues, who were very much moved at the feelings you expressed concering the members in particular, and Belgian Orchids in general, wish me to express their thanks for such a spontaneous expression of sympathy. Although the collections of Orchids in our country have not made much progress during the period of the war, when everyone here was in great trouble and difficulty, I am confident that interest in Orchids will soon revive as a result of will and work. We hope that our cordial relations with English Orchidists will endure in the future."

ORCHIDS FROM FAIRLAWN, PUTNEY.

FLOWERS of several beautiful Orchids are sent from the collection of H. S. Goodson, Esq., Fairlawn, Putney, by Mr. G. H. Day. Odontoglossum Wiganianum is a finely shaped flower, regularly spotted with dark chestnut brown on a yellow ground, the spots being more or less confluent towards the apex of the segments. Being a hybrid from O. harvengtense and O. Rolfeæ, it combines the characters of the four popular species, O. crispum, triumphans, Pescatorei, and Harryanum, and owing to the yellow ground and dark brown blotches it contrasts very effectively with many others of this favourite group. O. Chieftain is a hybrid from O. Rolfeæ and O. Vuylstekei, and has dark red-brown sepals and petals, with a light yellow margin, and a few similar splashes, the lip being light yellow in front and blotched with claret in front of the deep yellow crest. Four others belong to the large and varied group known as blotched crispums. O. c. Blue Queen has a lilac ground colour, and a zone of very large claret blotches on the segments. Goodsoniæ has a white ground, and the blotches rounded, partially confluent, and rather regularly diffused over the flower. The var. Mrs. Goodson has very large red-brown blotches, separated by broad white bands, and one called var. Captain has numerous rounded blotches of a cinnamon red shade.

Five Odontiodas give a brilliant touch of colour. There are two forms of O. Bradshawiæ, one scarlet red with an obscure yellowish zone near the margin, the other with a yellow ground and numerous red blotches on the disc, and a margin of the same colour. O. Diana is a dark salmon red, shading to orange at the tips and on the lobes of the lip, while Goodson's var. is of a nearly uniform crimson. O. Cooksoniæ Royal Scarlet may be described as crimson scarlet, with yellow markings on the lower part of the lip.

The plants are evidently in thriving condition, though Mr. Day remarks that in some cases the flowers are not as large as usual, owing to the necessity of economy in fuel consumption during the past winter.

AUSTRALIAN ORCHIDS.

THE Orchids of Australia are numerous and interesting, and some of them are familiar to our readers from the beautiful coloured drawings of Fitzgerald, though few of the terrestrial kinds are known in European gardens. A few interesting details respecting them have been sent by Dr. R. S. Rogers, of Adelaide, who has long made a study of the group, and has described a number of new species. He remarks that the Orchids of South and West Australia are entirely terrestrial. The majority of the species re-appear in the same localities with clockwork precision every season, though often in greatly reduced numbers in years of drought. On the other hand, he has noticed that after extensive bush fires, which frequently sweep the hills, they become very prolific, though whether this is due to the eradication of the ranker competing vegetation, to the stimulation of the tubers by heat, to some chemical change in the soil by combustion, or to new and favourable conditions for the propagation of some friendly fungus he is unable to say. The thorough way in which some of these fires clears the scrub of all undergrowth makes it rather surprising that this should largely re-appear within a few weeks or months. The resting period of some of the tubers is very prolonged, in some cases extending through many seasons, and he has occasionally potted up tubers which from some cause have not vegetated for five or six years. Three interesting cases are mentioned in this connection.

"Caleana major is a rare plant in South Australia, and the very few localities in which it is to be found are known to me. The summit of Mt. Lofty is a place which I and my friends have constantly visited and searched for many years, and this Caleana had never been found within many miles of it, yet one season a botanical friend discovered quite a number of plants there, and brought them to me for determination. Had the tubers survived for a long period of time and then vegetated, or had the seeds a very long vegetating period, extending over many seasons? That is about ten seasons ago, and though we have looked for it carefully every year we have seen no trace of it since.

"Prasophyllum gracile, Rogers, was also considered by me a rare species and so far as I knew it was only to be found in one locality, about fifty miles from Adelaide. And yet one season, after a most devasting fire, it appeared in a much frequented locality in our hills near the city, in countless numbers. That was, I think, in the year 1913, and although I have made the most diligent search over the hills in every subsequent season I have failed to find even a trace of it.

"Certain species would appear to be almost drought proof. Until quite recently I believed that a ten-inch annual rainfall provided the minimum amount of moisture necessary for the maintenance of Orchids here. There would, however, appear to be at least one exception. Quite recently I received Pterostylis rufa from outside this line of rainfall, in our central desert country. Now the genus Pterostylis is generally a shade and moisture-loving one, P. rufa being exceptional in that it is a summer form, blooming in the very hot weather (November and December). I knew that it penetrated very far north, but would *a fortiori* have excepted some of the more hairy forms of Caladenia as more likely to survive in that country than any Pterostylis with which I was acquainted. The following facts, however, are interesting in this connection. The tubers of Pterostylis rufa are unusually large in comparison with the size of the plant, and its power of resisting dessication is most remarkable. I may add that it is quite naked and unprotected by scales. On one occasion I found a plant of it growing in the cleft of a rock in the middle of a stream, and brought home the tuber, intending to plant it, placing it on a small mantlepiece, where I saw it from time to time, but for various reasons neglected to carry out my intentions. In the following season I was surprised to find that it was beginning to vegetate. During the whole of this time it had not received any moisture other than that it could obtain from the bare marble slab; the summer had been very hot (sometimes over 100° F.), and the atmosphere exceedingly dry. I watched it. It threw up the usual rosette of leaves, then a scape and bud. My wife at this point in its history, unfortunately, took pity on it and potted it, when a slug promptly ate it and brought my observations to a close. The endurance and vitality of this plant under such drastic conditions are however worth recording.

"Among Australian terrestrial Orchids natural hybridisation undoubtedly occurs, and has to receive careful consideration when dealing with any supposed new species. I have observed it chiefly in Diuris, Thelymitra, Prasophyllum, Microtis, Pterostylis, and certain species of Caladenia. Such hybrids, however, do not appear to be presistent, for in several instances I have marked the localities, but they have failed to reappear in subsequent seasons. They often occur in places which are under constant observation, such as our National Park, where the Orchidaceous flora is thoroughly known. On looking over my collection of drawings I notice one of a hybrid which I suspect to be Diuris longifolia × D. pedunculata, and I am sending you a copy of it."

It would be interesting to have particulars of the conditions under which this Diuris was found. Presumably it came from a locality in which the two supposed parents grow together, for its characters are fairly intermediate, as is apparent on comparison with coloured figures of the latter.

Further observation on the presistence of hybrids in Australia would be interesting, for experience here suggests that under suitable conditions they should continue to flourish. Attempts to perpetuate them from seed is a quite different matter, on which a few experiments would be interesting, which our Australian friends might attempt to carry out.—R. A. R.

LYCASTE SKINNERI ALBA.—We regret to see that Mr. T. D. A. Cockerell has now described the beautiful Lycaste Skinneri alba as a distinct species, under the name of L. alba (*Torreya*, 1919, p. 10). Speaking of some plants purchased in Guatemala City, but which were brought from the surrounding country by the natives, Mr. Cockerell remarks: "After comparing the living plants with typical L. Skinneri, flowering at the same time, I came to the conclusion that the so-called L. Skinneri alba was a distinct species. It apparently occurs wild, and in spite of assertions to the contrary, it certainly has structural as well as colour characteristics." A note on the plant has previously been given (*O.R.*, xxiv. p. 60), and Mr. Cockerell now remarks: "As no more light has come to clear up the matter, and it still seems to me at least probable that the white form should be separated, I offer a brief description from our material." The trouble is that Mr. Cockerell has got a form of L. Skinneri afflicted with albinism, and there are other forms afflicted in the same way. They certainly occur wild, until they are picked out for garden purposes on account of the chaste and beautiful colour. Collectively, they differ from L. Skinneri in albinism, a condition that operates on forms that are dissimilar in other respects. And how many species might not be carved out of the variable L. Skinneri on the same methods!—R. A. ROLFE.

ORCHIDS OF ORIZABA.—I read with particular interest the notes at pp. 43, 44, respecting the habitat of Odontoglossum cordatum and O. maculatum in Mexico, and the mention in connection therewith of O. Rossii. For I once collected the latter, in flower, in the Sierra Juarez, Oaxaca, at an elevation of probably between 9,000 and 10,000 feet. I well remember that, to get the plant, I had to hew down the tree upon which it grew, because it could not be climbed. I resided for some time at Orizaba, and was aware that O. Rossii occurred in the surrounding mountains, but the favourable occasion to look for it did not occur. The pretty Cattleya citrina was also to be found there. Lycaste aromatica and various Sobralias were common in the same locality, but not so high up. Orizaba is situated at about 5,000 feet above sea level. Several thousand feet lower, and nearer Vera Cruz, Brassavola glauca had its habitat. Mr. J. C. Harvey and I together once made a fine bag of this plant, close to Paso del Macho, on the Mexican Railway.—J. L. HERMESSEN.

OBITUARY.

ROBERT JOHNSON.—An old and highly successful Orchidist has recently passed away in the person of Mr. Robert Johnson, for many years gardener to the late Mr. Thomas Statter, Stand Hall, Whitefield, near Manchester, afterwards with his son, and finally with Mr. J. J. Holden, of Southport. Since the death of the latter, in 1914, Mr. Johnson has lived in retirement at Southport, and the end came rather suddenly after an attack of paralysis, deceased being in his seventy-eighth year. The Statters, father and son, were both keen Orchidists, and for many years groups from the Stand Hall collection took a leading place in the exhibitions of the Manchester Royal Botanical and Horticultural Society, and gained many honours, and afterwards at meetings of the Manchester Orchid Society. We had the pleasure of seeing the collection in 1894, and in an account then given (*O.R.*, ii. pp. 291-293) we remarked on the success with which Cattleyas were grown. The conditions were somewhat unusual. The house was a rather lofty structure, and very little top ventilation was given, but the bottom ventilators were nearly always open. The plants were grown over stone benches in which a number of circular holes were cut, and underneath were situated the water tanks and hot water pipes, so that the air became constantly warm and moist before reaching the plants. The result in some cases was an unusual production of roots, of which examples have been illustrated in our pages, C. Lord Rothschild in 1896 (p. 337), and C. Hardyana as the frontispiece to the succeeding volume. Mr. Johnson preferred basket treatment, and attributed much of his success to judicious watering and the provision of an adequate amount of atmospheric moisture. A feature on the occasion mentioned was a batch of ten plants of Cattleya Rex in sheath, which afterwards produced sixteen spikes and an aggregate of forty-five flowers. The species has now become very rare in cultivation.

It may be interesting to reproduce (see opposite page) an example of this remarkable root development, as shown by a plant of the original Cattleya Hardyana, for which Mr. Statter received both a First-class Certificate and a Cultural Certificate at Manchester in October, 1896. In sending the photograph, Mr. Statter remarked: "The roots are legion and hang quite a yard from the basket. There are people who contend that Cattleyas of the aurea section cannot be kept vigorous for long, but this is a most interesting example to the contrary. The root action is beyond belief, and I attribute it very much to the shape of the basket it is grown in." It is also a good example of Mr. Johnson's skill in cultivating this beautiful group of plants, although modern culture favours a more convenient method of providing

for the mass of roots. Dendrobium Phalænopsis is another plant which on a subsequent visit we observed was grown with great success. In fact, Mr.

Fig. 6. CATTLEYA HARDYANA, showing remarkable root development.

Johnson was an enthusiast in Orchid culture and a good observer, and such qualities usually make for success.

SIR FRANK CRISP, V.M.H.—This well-known and enthusiastic horticulturist passed away on April 29th, in his seventy-sixth year, after an illness of about a fortnight. A man of many activities, Sir Frank was the possessor of a beautiful garden at Friar Park, Henley-on-Thames, in which he built one of the most remarkable rockeries in existence. On this, among a mulitude of alpine and other plants, he found room for a number of interesting hardy Orchids, among which we recall the chaste and beautiful Orchis maculata alba, figured in *O.R.*, xxiv. p. 200. Sir Frank also grew an interesting collection of tropical Orchids, which appealed to him quite as much for their quaint structure and appearance as for their beauty, and the deceased had a keen appreciation of both qualities, as will be apparent to everyone who has fully explored the famous rockery at Friar Park. Sir Frank was for many years Treasurer of the Linnean Society and Honorary Secretary of the Royal Microscopical Society, and at the time of his death President of the Horticultural Club. He was awarded the Victoria Medal of Horticulture by the R.H.S. early in the present year for his services to Horticulture.

EPIPACTIS VIRIDIFLORA IN BRITAIN.

SOME six years ago Epipactis viridiflora, Rchb., was added to the British flora by Messrs. J. A. Wheldon and W. G. Travers, from specimens gathered on the Lancashire coast (*Journ. Bot.*, 1913, pp. 307, 343), and more recently it has been recorded from the Isle of Wight by T. and T. A. Stephensen (1918, p. 1), and from near Guildford by Col. M. J. Godfery (1919, p. 37). More recently Col. Godfery has suggested (1919, p. 80) that the plant long known in Britain as E. media is identical with E. viridiflora, and that it differs from the original E. media, Fries. The history of the British E. media is very fully given by Col. Godfery, and in a letter he suggests a further comparison with the Continental plant.

The fact is, the original Epipactis media, Fries, is a mixture, as we have long known. It was described in 1839 (*Fries, Nov. Fl. Suec.*, Mant. ii., p. 54), the author basing it upon three distinct plants, which he calls A, B, and C, as follows: "A, floribus albis," based on Serapias microphylla of Dutch botanists, not of Ehrh., and S. latifolia var. albens, *Wahl. Fl. Suec.*, p. 589; "B, floribus viridibus," based on S. viridiflora, *Rchb. Ic. Bot.*, fig. 1142; and "C, floribus roseo-rubris," Wahl., based on Serapias latifolia var. atrorubens, Wahl., *l.c.* p. 589, *Fl. Dan.* t. 1938, and E. atrorubens,

Rchb. Ic. Bot., fig. 1141. As to the identity of these three forms, we can say that E. media form B is E. viridiflora, Rchb., and E. media form C is E. atrorubens, Ehrh., while E. media form A is probably E. microphylla, Ehrh., which is figured at t. 811 of the *Flora Danica* under the name of Helleborine latifolia montana. This plate is cited by Lange (*Haandb. Dansk. Fl.*, p. 579), and the lip is shown as white. Besides, there are Danish specimens at Kew, so that the remark made by Fries, "not of Ehrh.," must have arisen by some misapprehension. E. media, Fries, may thus be entirely abolished, for each of its three forms has an earlier name, and when these are removed nothing is left.

As to the British E. media, Bab., it is probably correct to refer it to E. viridiflora, Rchb. (Fl. Germ. Excurs., p. 133), which was based on the earlier Serapias viridiflora, Hoffm. But whether this represents a really distinct species is a more difficult problem, for there are other doubtful forms, and we should like to see the whole question examined in the light of possible hybridity. There is the natural hybrid, E. Schmalhousenii, Richter, derived from E. latifolia and E. atrorubens, and the question is what would happen if this were self-fertilised, or crossed with the original parents. There are other perplexing intermediate forms, whose nomenclature is a tissue of confusion in books. What is really wanted is a few definite experiments, which should be within the range of possibility for anyone who can cultivate Epipactises successfully. Among garden plants there are many examples of crosses between known hybrids and their original parents, and their existence in nature need not be doubted. E. microphylla is absent from Britain, but on the Continent hybrids between it and both E. latifolia and E. atrorubens have been recognised, so that there is plenty of room for experiment.

R. A. ROLFE.

BULBOPHYLLUM SPECTABILE VAR. VIRIDE.—A very distinct variety of Bulbophyllum spectabile has flowered at the Royal Botanic Garden, Glasnevin, of which flowers have been sent to Kew, together with those of the typical form. The sepals and petals of the novelty are clear light green throughout, while in the type they bear eight to ten lines of nearly confluent red-brown dots. The lip in both forms bears a number of prominent tubercles with a brown apex. The original B. spectabile flowered at Glasnevin in May, 1896, and was described somewhat later (Rolfe in *Kew Bull.*, 1918, p. 193). The plant is said to have been received from Assam, and in June, 1901, a specimen that proved identical was received for determination from Mr. W. Bull, with the record that it came from Burma. The species belongs to the Sestochilos section of the genus, and is allied to B. striatum, Rchb. f., but has much larger flowers. A marked character of this attractive little plant is the much elongated stalk of the lip.—R.A.R.

CALENDAR OF OPERATIONS FOR MAY - JUNE.

By J. T. BARKER, Orchid grower to His Grace the Duke of Marlborough, Blenheim Palace, Woodstock, Oxon.

WITH the increased amount of daylight and sun heat, the majority of the plants are growing and rooting freely, and every inducement should be given them to build up strong, healthy pseudobulbs. The temperatures now onwards for the next few months should be raised a few degrees in each department, and during bright weather will attain the maximum for the year, which is to the benefit of the warmer divisions. Cool House Orchids, however, soon suffer from excessive heat, and during hot weather must be kept as cool as possible by the use of a greater amount of humidity in the atmosphere. In dry districts this, combined with the judicious use of the ventilators, is the only means of maintaining that cool, buoyant atmosphere which these plants love.

ATMOSPHERIC MOISTURE may be used abundantly, as no plants can make satisfactory growth in a dry, parched atmosphere, whilst such conditions bring with them an unlimited increase of insect pests. Unsuitable conditions of atmosphere, either too wet or too dry, bring their respective troubles, and a proper balance of air, heat and moisture must be maintained to secure the best results. Spraying and syringing may be indulged in on fine bright days, and only soft tepid water should be used for this purpose. On cold, damp days it should not be attempted, and sufficient moisture will be obtained by thoroughly damping the floors, stages, &c.

VENTILATION.—During hot weather the ventilation of the houses will need considerable attention, especially the Cool division. This regulates the temperature, and combined with a proper amount of humidity in the atmosphere, enables the plants to make satisfactory growths, to be ripened and consolidated at a later period. The ventilation of the different departments must be so arranged that the plants may receive at all times a continual supply of fresh air, without causing draughts. The bottom ventilators may be left partially or wide open at night, according to circumstances, thereby providing a sweet and healthy atmosphere, without which no plant can thrive under the artificial conditions of glass houses. The life of the plants depends entirely upon the conditions provided for them, and an overheated stuffy atmosphere causes exhaustion.

WATERING must be done carefully at all times, and the state of each individual plant, whether in active growth or otherwise, must be taken into consideration. The danger of overwatering is hardly present when the compost is full of healthy roots, and the plant is in active growth, but at other times an excess of water has the effect of killing the roots. On the other hand, an inadequate supply of water is a hindrance to free growth,

and if carried too far will cause them to die from shrivelling, and the effect to the plant is much the same in both cases.

SHADING will now be general, and requires considerable attention, as the blinds should only be down when really necessary. The sun should not be allowed to shine directly on the plants when there is a danger of the plants suffering. Orchids comprise both sun-loving and shade-loving kinds, hence the necessity of a close observation of the effect of strong light on the different classes, and a corresponding arrangement of the plants in accordance with their natural requirements. Nature is inexorable in this respect, and whatever pains or trouble we bestow on ascertaining the requirements of the respective plants under our care, the better and greater will be our reward.

SUMMER QUARTERS.—Those plants which thrive under an equable temperature the whole year round should be removed from the Intermediate house, where they have passed the winter, to the Cool house, where they may remain until the autumn. These include Lælia harpophylla, pumila, præstans, Jongheana, and Dayana, Dendrobium infundibulum and Jamesianum, Odontoglossum Krameri and nævium, Miltonia vexillaria and its hybrids, as they go out of bloom, also M. Phalænopsis, Endresii, and Schrœderiana, with Ada aurantiaca, which all do better during the winter in a light position in the Intermediate house. During the summer they prefer the Cool house. In different districts, the most suitable time to remove them will vary, but it may safely be done when the Cool house rises to 60° without the aid of fire heat. For some little time after removal it is advisable to keep the plants a trifle drier at the root than they have been in the warmer division. Some of the Masdevallias thrive remarkably under these conditions, especially those of the Chimæra section, M. tovarensis, and a few others.

ANGULOAS.—In the Cool house the various Anguloas are making new growth, and pushing up their flower spikes. When their flowering period has passed they may have attention as regards repotting, should they require it. They will succeed planted in a well-drained compost of clean fibre, in which a small portion of good loam fibre may be added. When repotting, keep the base of the young growths on a level with the rim of the pot, and place the material quite firmly around each plant. It is a mistake to pot loosely, with the present day materials. Water carefully until the new roots get freely established in the new material.

LYCASTES that require new rooting material when their flowering period has passed may be treated in precisely the same manner as Anguloas.

CATTLEYAS.—Amongst those which are in flower at the present time are C. Mendelii, C. Mossiæ, and their innumerable hybrids. C. Trianæ and C. Schrœderæ, with their hybrids, are commencing to make new roots, and

should the compost show signs of exhaustion, fresh material should be given. When the plants have been repotted, it is advisable to afford slightly more shade until the new roots begin to push in the new material, and water must be given with extreme care. These remarks also apply to many hybrid Cattleyas, Læliocattleyas, Brassocattleyas, and others which have produced their flowers during the late winter and early spring months, and are at the present time about to push new roots and commence their season's growth. At the present time there is a great scarcity of material suitable for compost, and under present conditions I would recommend A1 fibre, to which a few leaves and some sphagnum moss may be added. As the plants become re-established, increase the amount of water to the roots, taking care that the material becomes moderately dry between each operation. As the growths extend, and the days become brighter and hotter, afford more atmospheric moisture. Young beginners should carefully study the plants, and learn to avoid overwatering all this section, especially so when they are not in active growth. Afford the plants ample ventilation whenever practicable, but cold draughts or strong currents of dry air from different openings must be avoided at all times. These plants make quite an interesting study, and there is no reason why everyone should not enjoy their beautiful flowers, as no Orchid will repay the cultivator better for the pains bestowed on their culture. Scale and other pests which infest them must be continually searched for and destroyed, as cleanliness is the greatest aid to good cultivation.

SOPHRONITIS GRANDIFLORA and its hybrids may likewise have attention as regards new rooting material should they require it. Whilst Sophronitis does best suspended in the Cool house, many of the hybrids derived from it require much warmer quarters to grow them well, hence the necessity of finding suitable quarters for the individual varieties.

CYMBIDIUMS.—As these plants pass out of flower, those that require repotting should have attention. At the present time there are so many beautiful varieties of these easily-grown plants that no collection can be considered complete without a few of them. Their flowers adapt themselves to any kind of decoration, and besides, last a considerable time when cut, hence their utility. Being plants which resent root disturbance, they should not be disturbed unless it is necessary owing to the compost becoming sour or exhausted. The plants bloom more freely and produce finer flowers when the pots are filled with roots. As they remain in the compost for a considerable time, it is essential that when repotting is done, it should be thoroughly. They require plenty of drainage, with a compost in which good yellow loam fibre predominates, with sufficient finely broken crocks added to keep the whole open and porous. Should the loam be inclined to run together, as some does, peat fibre may be added to prevent this taking

place. A shady position in a cool Intermediate house, with plenty of fresh air, answers their requirements, but they resent strong sunshine at all seasons. When well rooted and in full growth, they need copious supplies of water at the roots, and may be syringed to prevent attacks of red spider.

CYPRIPEDIUM niveum, bellatulum concolor, Godefroyæ, and any of their hybrids, which are now passing out of flower, and are in need of new rooting material, through becoming loose, or the material sour, should be overhauled as soon as possible after their flowering period is over. Speaking generally, these are difficult Orchids to keep in vigorous health. I believe most failures are attributed to keeping them much too dry, and potting them in shallow pans, as when in good health they are rather deep rooting subjects. Yet at times one meets with them thriving under quite contrary conditions, hence the adage no royal road to success. A compost I would recommend is composed as follows, one part good loam fibre, one of good fibrous peat, mixed with coarse sand, broken crocks, and sphagnum moss. Ordinary pots are suitable receptacles, and are preferable to pans. The pots should be well drained with soft broken porous bricks, which retain and give off the moisture as the compost becomes dry. The water will have a free passage through this compost, and when the plants become well rooted they will take up a considerable quantity, and it is an important point that they should never be allowed to remain dry for any length of time. The warm end of the warm Intermediate house is suitable for them, and plenty of moisture should be maintained around them during hot weather. Overhead syringing is detrimental, but slight spraying may be indulged in during very hot weather, which will prevent attacks of thrip and other insect pests.

ONCIDIUM MACRANTHUM, and others of this section, will now be in flower, and some will be over. Those plants that are not flowering will probably be forward enough in growth to enable any necessary repotting to be done. By reason of the length of time the spikes remain on the plants, it is most essential that the plants should be in robust health, therefore, no weak or delicate plants should be allowed to carry flower spikes. Those plants which are exhausted, from whatever cause, should be shaken out of the old material and placed in small pots, removing any back leafless bulbs. They delight in a sweet clean compost, made up of equal portions of peat, AI fibre, and sphagnum moss, to which some half decayed leaves may be added. They should be potted moderately firmly, as when potted loosely the compost soon becomes sour, which these plants detest. Newly-potted plants will not require much water for some time, but as the growth and roots develop the amount may be considerably increased. They revel in abundance of fresh air, and may be frequently syringed over head on bright days, which is a great aid to keeping them thoroughly clean. The back bulbs taken off the plants, may be potted up into quite small pots, and in

many cases will quickly make quite serviceable plants. This general propagation is the only means of keeping a healthy stock of many of the species, which it is doubtful if we shall ever see again imported in the same quantity as in the past.

GENERAL REMARKS.—These two months comprise the busiest period of the year, and this season, with the reconstruction of our collections and the abnormal conditions, it will be doubly so. It will take time to bring our collections up to their pre-war excellence, but we may now hope to be free from the worries and anxiety of the past four years, and the blessings of peace should enable us to follow our peaceful calling with the same devotion as of yore. And if our reunion at Chelsea this year may not be as large as many that are past, we may be thankful that circumstances permit of our once again taking part in this great festival.

ORCHIDS OF COSTA RICA.

LAST September a visit to a friend's cattle farm up at Irazu, at an elevation of nearly 7000 feet, gave me an opportunity to do a little collecting. Among delightful surprises was that of finding a low tree covered with plants of Telipogon in flower, an extraordinary genus. Some of the plants were scarcely an inch across, yet had the full-sized flower of the largest ones. I had always thought Oncidium iridifolium the largest flowered of our diminutives; this plant far surpasses it. Of course, the two do not grow in any close proximity. I had not thought that Hexadesmia occurred at such an altitude, yet here was one in abundance, in contiguity to Oncidium Warscewiczii.

On the return journey I saw, in the hedges of the Matamora district, an Epidendrum with long, pendant inflorescences of ochraceous salmon colour. I have from the Pacific side another Epidendrum with much larger, primrose yellow flowers, about 1½in. across. In this case the whole plant is pendant, growing on the perpendicular bark of large trees, whereas the other local species grows in the crotches, natural or otherwise, of fences. These fences consist of many species of trees, which are planted in the form of stakes in the dry season, but soon root and become trees of more or less vigour, this depending on local conditions of richness of soil and the prevailing winds. At medium elevations, 4500 to 7000 feet, on good soil, these fences have preserved many Orchids in the midst of cultivated districts, which but for their asylum would have disappeared long ago.

This year my Cycnoches have only female flowers. I was surprised to find a plant of this genus on the farm here, at an altitude of 4700 feet, at least an unusual occurrence.

C. H. LANKESTER.

ONCIDIUM CANDIDUM.

A DISTINCT and charming little Oncidium is shown in the annexed figure, which represents a plant that bloomed at Kew, reduced to about one-fourth natural size. Oncidium candidum is a native of Guatemala, and was originally discovered by Hartweg when collecting for the Horticultural Society. It may have been collected out of bloom, for there are no wild dried specimens, and the species was originally described from a plant which flowered in the garden of the Horticultural Society in 1843 (Lindl. in *Bot. Reg.*, xxix. Misc. p. 56), coloured drawings of the flower being

Fig. 7. ONCIDIUM CANDIDUM.

preserved in Lindley's Herbarium, though there are no corresponding dried flowers. It was afterwards made into a distinct genus by Reichenbach, under the name of Palumbina candida, and was afterwards figured in the *Botanical Magazine* (t. 5546). The source of Lindley's original drawing was wrongly attributed to Messrs. Loddiges by Reichenbach (*Gard. Chron.*, 1865, p. 793), who records that a plant was secured for the collection of Consul Schiller when the Loddiges collection was broken up, and that it was much esteemed in the Schillerian collection, since the flowers remind one of flying doves. Curiously enough, Reichenbach's mistake has been

repeated in almost all the later accounts. We find no record that the species has been subsequently met with, and we believe that the conditions under which it grows are still unknown. It evidently occurs, however, at a considerable elevation, for it succeeds well at the warmest end of the Cool house. R.A.R.

SOCIETIES.

ROYAL HORTICULTURAL.

A MEETING was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on April 8th, when there was a good display of Orchids, and the awards consisted of four medals and three Awards of Merit.

Orchid Committee present : Sir Jeremiah Colman, Bart. (in the Chair). J. O'Brien (hon. sec.), W. Bolton, C. J. Lucas, Walter Cobb, W. H. White, W. J. Kaye, J. E. Shill, Arthur Dye, S. W. Flory, W. H. Hatcher T. Armstrong, A. McBean, E. R. Ashton, Pantia Ralli, R. G. Thwaites, Sir Harry J. Veitch, Stuart H. Low, R. A. Rolfe, G. Wilson, R. Brooman-White, and F. J. Hanbury.

MILTONIA VENUS ORCHIDHURST VAR. (vexillaria × Phalænopsis).—A particularly fine form, having light mauve sepals and petals, and a blush white lip, with radiating dotted lines of ruby red, and the disc yellow. Exhibited by Messrs. Armstrong & Brown.

ODONTIODA GLADYS SUPERBA (Odm. Pescatorei × Oda. Bradshawiæ).—A fine variety, and shown in excellent condition, the plant bearing two strong spikes, with an aggregate of 54 flowers. The flowers are of excellent shape, the centre of the segments white, prettily spotted with brown, and the broad margins rosy mauve, while the lip is blush white in front, and red behind, with a deep yellow crest. Exhibited by Dr. Craven Moore, Victoria Park, Manchester (gr. Mr. T. Arran).

ODONTIODA MARGARET GATTON PARK VAR. (Odm. armainvillierense × Oda. Bradshawiæ).—A dark, nearly self-coloured variety of fine shape, the colour being deep mahogany red, becoming lighter near the margin, and with some light yellow at the apex and behind the deep yellow crest of the lip. Exhibited by Sir Jeremiah Colman, Bart.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), received a Silver Flora Medal for an interesting and varied group of Odontoglossums, Odontiodas, and various others, among which we noted good examples of Cattleya suavior, C. Schrœderæ alba, the richly-coloured C. Empress Frederick Rosslyn var., Dendrobium nobile virginale, the deeply-fringed D. Brymerianum, Maxillaria Sanderiana, Epidendrum Endresio-Wallisii, Cypripedium Chamber-Leeanum, Cirrhopetalum Mastersianum, Cymbidium

Alexanderi roseum, a fine spike of the rare Neomoorea irrorata, Sophrocatlælia Pittiae (Scl. Marathon × C. Maggie Raphael alba), most like the latter in general character, a well-bloomed Odontoglossum Aglaon, a few Miltonias and others.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), sent a few fine Lycastes, including a well-bloomed plant of L. Mary Gratrix, evidently of the same origin as L. Balliæ, and the handsome varieties of L. Skinneri known as rosea, delicata, and Ernest Ashworth, all with splendidly-developed flowers.

Col. Stephenson R. Clarke, Borde Hill, Cuckfield, Sussex, sent an interesting generic hybrid, derived from Sophrolælia Psyche and Brassolælia Gratrixiæ, most like the latter in general character, and having orange-coloured sepals and petals, and a light yellow lip. It represents a new combination, and was called Clarkeara Paul, but as it combines the same three genera as Lowiara (Sophronitis × Brassolælia) the name has been amended to Lowiara Paul.

C. J. Lucas, Esq., Warnham Court, Horsham (gr. Mr. Duncan), sent examples of Læliocattleya Pattii (Adelina × luminosa), with orange-coloured flowers, a richly-coloured Lc. Lucasiana, Odontioda Margaret, Odontoglossum Doris, and O. crispum Rosy Morn.

Messrs. Armstrong & Brown, Tunbridge Wells, received a Silver Flora Medal for a fine group, mostly consisting of Odontoglossums and Odontiodas, with a few Cymbidiums behind. Noteworthy examples were Odontioda Orion (Oda. Coronation × Odm. percultum), most like an enlarged edition of the former, and prettily blotched with purple-red on a white ground, O. Gloss Orchidhurst var., a particularly fine orange-coloured form with a very broad lip, O. Aspasia with a long spike, Odontoglossum Violet Queen (illustrissimum × Doris), a beautiful violet-mauve flower margined with white, and the lip with a red blotch in front of the deep yellow crest. We also noted well-flowered examples of Sophronitis grandiflora, Miltonia Hyeana, Cypripedium Maudiæ and others.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora Medal for a brilliant group, consisting largely of Odontoglossums and Odontiodas, with some excellent Miltonias, a fine Cœlogyne Lawrenceana, an example of Polystachya paniculata, Chysis bractescens, Læliocattleya Golden Dawn (Trimyra × Lydia), Sophrocatlælia Marathon, Cattleya Enid var. Queen of Roumania, and others. Noteworthy examples were Odontioda lutescens (Oda Schrœderi × Odm. crispum xanthotes), a charming cinnamon-orange flower, with light yellow margin, O. Cora (Odm. eximium × Oda. Coronation), blush white with a great red blotch on each segment, O. Nada (Oda. Red Cross × Odm. eximium), a finely shaped flower, bright carmine rose with broad white margin and tips, O. Hilda (Odm. Dora ×

Oda. Royal Gem), O. Dulcies (Oda. Cooksoniæ × Odm. illustrissimum), bright carmine rose, Odontoglossum Radiant (Dora × Alexandræ), O. Harold (Jasper × eximium), and other good things.

Messrs. J. & A. McBean, Cooksbridge, received a Silver Banksian Medal for a good group, including examples of Læliocattleya Beatrice, Arcturus, Ballii, Moonbeam, and others, Lælia Lorna (Cowanii × purpurata), Odontioda Gladys superba and O. Schrœderi, Odontoglossum crispum xanthotes, O. Ruby (Vuylstekeæ × spectabile), O. Lobbiæ, O. eximium, Cattleya Cowaniæ alba, the rare Cymbidium Parishii var. Sanderæ, and various well-grown Cymbidiums behind.

At the meeting held on April 29th there was a fine display, and the awards consisted of six medals, four Awards of Merit, one Preliminary Commendation, and one First-class Certificate, the latter for a remarkable Odontioda, which illustrates the progress that is being made in this popular garden genus.

Orchid Committee present: Sir Harry J. Veitch (in the chair), J. O'Brien (hon. sec.), W. H. White, W. Bolton, F. K. Sander, S. W. Flory, C. J. Lucas, W. J. Kaye, T. Armstrong, E. R. Ashton, R. G. Thwaites, F. J. Hanbury, R. A. Rolfe, Arthur Dye, H. J. Chapman, and R. Brooman White.

FIRST-CLASS CERTIFICATES.

ODONTIODA LADY VEITCH (Oda. Cooksoniæ Orchidhurst var. × Odm. Mars).—A brilliant acquisition, the young seedling bearing its first flower, which was of exceptional size, and the segments very broad and overlapping, the colour chestnut red, with a narrow light yellow margin, and the lip white in front, with a large dark red zone round the yellow crest. Exhibited by H. T. Pitt, Esq., the seedling having been raised by Messrs. Armstrong & Brown.

AWARDS OF MERIT.

CATTLEYA RAJAH (Enid × Empress Frederick.—A very large and richly-coloured flower, of labiata shape, and the colour deep rose, with a ruby-crimson lip, the latter having some orange veining on the disc. Exhibited by Messrs. Stuart Low & Co.

ODONTOGLOSSUM ASHTONII (amabile × ?).—A handsome hybrid, heavily blotched with purple on the lower two-thirds of the segments, and the ground-colour pure white. Exhibited by E. R. Ashton, Esq.

ODONTOGLOSSUM RADIANT VAR. MARION (Dora × Alexandræ.—A handsome variety, the greater part of the flowers being violet-purple, with the ground-colour reduced to a whitish margin and a few irregular spaces, and the lip white with numerous purple spots. Exhibited by Messrs. Flory & Black.

ODONTOGLOSSUM THE TIGER (Lawrenceanum × Stella).—A large and handsome hybrid, the broad segments heavily blotched with dark red-brown on a yellow ground, and the lip with much of the triumphans shape. Exhibited by H. T. Pitt, Esq.

PRELIMINARY COMMENDATION.

ODONTIODA SIGNOR ORLANDO (Odm. Jasper × Oda Bradshawiæ.—A very promising hybrid, the large, round flower having a lilac ground, with zones of dark violet-purple, and a line of the same colour at the base of the petals, the apex of the lip being white. Exhibited by Messrs. Armstrong & Brown.

GENERAL EXHIBITS.

E. R. Ashton, Esq., Camden Park, Tunbridge Wells, received a Silver Banksian Medal for a small group of Odontoglossums and Odontiodas, the latter including examples of O. Joan Fowler's var., and a very prettily-marked form of O. Royal Gem.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), received a Silver Banksian Medal for a choice group, the centre containing some good examples of Miltonia Bleuana, Charlesworthii, Hyeana, and Venus, and we noted good examples of the prettily spotted Odontoglossum Pescatorei Duchess of Westminster, Odontioda Lambeauïana var. Nellie, Cattleya Princess Mary, Cymbidium Lowgrinum, the fringed Chondrorhyncha Chestertonii, Cypripediums, a cut spike of Eulophiella Elisabethæ, and others.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. Collier), staged an interesting little group, including Odontioda Prince Bibesco (Oda. Chantecler × Odm. eximium), with dark scarlet flowers, a well-grown Odontoglossum Oerstedii with ten flowers, the red Polystachya paniculata, Cœlogyne Sanderæ with five spikes, a well-bloomed Dendrobium Brymerianum, and cut flowers of several hybrid Dendrobiums, including Wiganiæ, Thwaitesiæ, chessingtonense, and others.

Mrs. Norman Cookson, Oakwood, Wylam (gr. Mr. H. J. Chapman), sent well-flowered examples of Odontioda Florrie (Bradshawiæ × Vuylstekeæ), a fine red-purple flower, O. Chapmanii (Bradshawiæ Cookson's var. × ?), bearing a fine spike of red flowers with a pale margin, O. Clive, O. oakwoodiensis, Odontoglossum armainvillierense, and a fine hybrid from O. splendidissimum × Pescatorei, blush white with well spotted flowers.

Pantia Ralli, Esq., Ashstead Park (gr. Mr. Farnes), sent Odontoglossum crispum aureum Holdenii, a well-shaped light yellow variety.

C. J. Lucas, Esq., Warnham Court, Horsham (gr. Mr. Duncan), sent Brassocattleya Maronii var. Evie, a fine white flower tinged with pale lilac.

Messrs. Armstrong & Brown, were awarded a Silver-gilt Flora Medal for a fine group, largely consisting of Odontiodas and blotched Odontoglossums in well-grown examples, with some good Læliocattleyas and Cymbidiums behind. We also noted a fine Miltonia Bleuana with six spikes, Brassocattleya Excelsior, Bc. Cliftonii magnifica, Lælia Ithone (purpurata × Latona), and others too numerous to mention.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver-gilt Flora Medal for a beautiful group, largely made up of Odontoglossums and Odontiodas, with a series of Miltonia Charlesworthii, Bleuana, vexillaria, Hyeana, and Lyoth in the centre. We also noted a brilliant form of Sophrocatlælia Anzac, Læliocattleya Astarte (Sylvia × Ariel), deep yellow with bronzy lip, Brassocattleya langleyensis, and other good things.

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver Flora Medal for a rich and varied group, including some good Cattleyas and Odontoglossums, well-bloomed examples of Læliocattleya Ballii, Sophrocatlælia Marathon and Anzac, Sophrolælia Felicia, Renanthera Imschootiana, Oncidium Marshallianum, Dendrobium densiflorum, Sophronitis grandiflora, Cattleya Dusseldorfii Undine, and other good things.

Messrs. J. & A. McBean, Cooksbridge, received a Silver Banksian Medal for an interesting little group of Odontoglossums and others, in which we noted O. crispum xanthotes, O. c. aurem, a good O. armainvillierense, and O. Eugenia (cordatum × crispum), most like the former in shape, chestnut red on a white ground, and with a broad rounded lip, Læliocattleya Eunice var. Purity, Lc. Carolina (L. cinnabrosa × C. Schrœderæ), and others.

Messrs. Flory & Black, Slough, sent Odontoglossum Pyramus Langley var., claret-red with white margin, and O. Radiant var. Marion, violet-purple with a few whitish markings.

Messrs. Sanders, St. Albans, sent the prettily-spotted Odontoglossum Elfrida (armainvillierense × Uroskinneri), Odontioda Diana, the scarlet O. William Thompson, which we think must be a variety of O. Lambeauiana, Læliocattleya Boyleana var. Kerchoveæ, Cirrhopetalum picturatum, and a few others.

At the meeting held on May 13th, a week prior to the Chelsea Show, very few Orchids put in an appearance, and the awards consisted of a single medal and one Award of Merit.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), W. Bolton, Arthur Dye, Pantia Ralli, F. J. Hanbury, R. A. Rolfe, Walter Cobb, W. H. Hatcher, F. K. Sander, and Sir Harry J. Veitch.

AWARD OF MERIT.

ODONTIODA ZAMPA ROSSLYN VAR. (Cooksoniæ × Coronation.—A fine

variety, the flowers being of good shape, and the broad, rose-coloured margin of the segments separated by a narrow whitish line from the large red central area, while the lip is blush white in front, with some purple markings round the deep yellow crest. Exhibited by H. T. Pitt, Esq.

GENERAL EXHIBITS.

H. T. Pitt, Esq., Stamford Hill (gr. Mr. F. W. Thurgood), was awarded a Silver Flora Medal for a select and varied group, including the white Cattleya Mary Sander and C. Cowaniæ alba, Brassocattleya Princess Mary, white with an orange-coloured disc, Cynorchis kewensis, two good Miltonia Charlesworthii, Odontoglossum crispum var. Avalanche, the rare O. c. Oakfield Sunrise, O. Wilckeanum, the dark O. General Allenby, O. Thompsonianum, the prettily spotted O. Pescatorei Duchess of Westminster, Bulbophyllum Lobbii, Lycaste brevispatha, Cypripedium glaucophyllum, Chondrorhyncha fimbriata, and Cymbidium Lowgrinum, with examples of Epidendrum radicans, E. Wallisii, the brilliant Renanthera Imschootiana, and Dendrobium densiflorum behind.

A. J. Hollington, Esq., Forty Hill, Enfield (gr. Mr. W. May), sent a plant of Læliocattleya San Juan (C. Mendelii × L.c. Aphrodite), a very pretty hybrid, most resembling the latter, and having pale lilac sepals and petals, with the front of the lip purple, and some dark lines on the yellow disc.

F. J. Hanbury, Esq., Brockhurst, East Grinstead, showed a bloom of Schombolælia tibibrosa (L. tenebrosa × S. tibicinis), having rich brown sepals and petals and a purple lip, also Læliocattleya Aero (Lc. G. G. Whitelegge × C. Percivaliana).

In a group of herbaceous plants staged by Mr. G. Reuthe, Fox Hill Nurseries, Keston, we noticed three plants of the purple Orchis mascula.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

A meeting was held at the Coal Exchange, Manchester, on April 3rd, when the members of the Committee present were: The Rev. J. Crombleholme (in the Chair), Messrs. R. Ashworth, A. Burns, J. Evans, A. Hanmer, J. Howes, A. J. Keeling, W. Pickup, J. Thrower, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Odontoglossum crispum var. Perfection (crispum × c. Solum), O. Ebony var. maximum (Thompsonianum × King Arthur), Odontioda illustris var. marginata (Odm. illustrissimum × Oda. Charlesworthii), O. albo-rubra (Odm. Rawdon Beauty × Oda. Chanticler), and Oncidioda Cooksoniæ superba (C. Nœtzliana × O. macranthum), from P. Smith, Esq.

Odontoglossum Deliverance (parentage unknown). O. armainvillierense var. Doris, Odontioda Rajah West Point var. (Oda. Lambeauiana × Odm. Rio Tinto), and Cattleya Queen Mary, from S. Gratrix, Esq.

AWARDS OF MERIT.

Odontoglossum crispum West Point Ruby, Cattleya Schrœderæ var. Distinction, and Lycaste Skinneri Royal Beauty, from S. Gratrix, Esq.

AWARD OF APPRECIATION.

Odontoglossum amabile var. Cleopatra (spectabile × crispum Franz Masereel), and Odontioda Brunette (Odm. Vuylstekei × Oda. Zephyr), from S. Gratrix, Esq.

A Silver-gilt Medal was awarded to S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), for a beautiful group of Odontoglossums and Odontiodas, with a few Cattleyas, Lycastes, and others.

A Silver Medal was awarded to Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury (gr. Mr. E. Burns), for a group of choice Cypripediums and Cymbidiums, with Læliocattleya Cowanii, Sophrocatlælia Marathon, and others.

Interesting exhibits were sent by Philip Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson), and Mr. J. Birchenall, Alderley Edge, several from the former being included in the list of awards.

At the meeting held on April 17th, the members of Committee present were: Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, W. W. Field, J. Howes, A. Keeling, J. Lupton, D. McLeod, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Læliocattleya Moonbeam var. Oriflamne (C. Schrœderæ × L.-c. Ballii) and Odontoglossum crispum xanthotes West Point var., from S. Gratrix, Esq.

Odontioda Gladys magnifica (Odm. Pescatorei × Oda. Bradshawiæ) and O. aurea var. Beauty (Odm. luteopurpureum Vuylstekeanum × Oda. Charlesworthii), from P. Smith, Esq.

Odontoglossum King George V. (parentage unknown) and O. crispum Joyce Hanmer (crispum F. K. Sander × c. Maud Rochford), from A. Hanmer, Esq.

Cattleya Trianæ var. Lady Leon, from Sir H. Leon, Bart.

AWARDS OF MERIT.

Læliocattleya Moonbeam, Lc. armenica, Lc. Balliæ magnifica, Odontioda orphana (parentage unknown), and Cattleya Evelyn Sander magnifica (Dusseldorfii × Trianæ alba), from S. Gratrix, Esq.

Dendrobium Bronckartii and D. nobile var. Sanderæ, from Capt. Horridge.

Brassocattleya Maronii Bridge Hall var., from Mrs. Bruce and Miss Wrigley.

Cymbidium var. Marshal Foch, from Col. Sir J. Rutherford, Bart.

Odontoglossum crispum Empindale (c. Rossendale × c. Empress of India), from P. Smith, Esq.

Læliocattleya Elinor var. Edith (L. Coronet × C. Schrœderæ), from Sir H. Leon, Bart.

FIRST-CLASS AWARD OF APPRECIATION.

Odontoglossum Violet Gem (parentage unknown), from Col. Sir J. Rutherford, Bart.

FIRST-CLASS BOTANICAL CERTIFICATES.

Cœlogyne nervosa, Angræcum Leonis, and Promenæa Crawshayana, from Sir H. Leon, Bart.

Oncidium concolor albens Haddon House var., from P. Smith, Esq.

CULTURAL CERTIFICATES.

To Miss Edith Watson (who has had charge of the Orchid section for Sir H. Leon, Bart., during the latter period of the war), for a fine example of Angræcum Leonis.

To Mr. Coningsby, for Dendrobium nobile var. Cooksonianum.

To Mr. Lupton, for hybrid Cymbidiums.

A Silver-gilt Medal was awarded to S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), for a fine group of Odontoglossums, Odontiodas, and Læliocattleyas, with Brassocattleya langleyensis, Dendrobium nobile Berkeley's variety, and others.

A Large Silver Medal was awarded to Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury (gr. Mr. A. Burns), for a good group, in which several of the popular genera were well represented.

Silver Medals were awarded to Col. Sir John Rutherford, Bart, M.P. Blackburn (gr. Mr. J. Lupton), and Captain Horridge, Bury (gr. Mr. Coningsby), for good groups, the latter consisting largely of Dendrobiums.

Interesting exhibits were sent by Sir Herbert Leon, Bart., Bletchley Park, Bucks. (gr. Miss Edith Watson); Philip Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson), and A. Hanmer, Esq., Buxton (gr. Mr. Palin), these being well represented in the above list of awards.

At the meeting held on May 8th, the members of the Committee present were: The Rev. J. Crombleholme (in the Chair), Messrs. R. Ashworth, A. Burns, D. A. Cowan, J. C. Cowan, Dr. Craven Moore, J. Cypher, A. G. Ellwood, J. Evans, J. Howes, J. Lupton, D. McLeod, J. Thrower, W. Shackleton, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Odontoglossum eximium xanthotes vars. Madonna and Pearl White, O. Peerless var. James McNab (eximium × Ossulstonii) (a Silver Medal being also awarded), O. crispum var. Spot, O. promerens xanthotes, and O. eximium Canopus, from P. Smith, Esq.

Odontoglossum eximium xanthotes var. Madonna, O. crispum Conference (c. Luciani × c. F. K. Sander), Odontioda Gladys West Point var., and Lycaste Skinneri atrosanguinea, from S. Gratrix, Esq.

AWARDS OF MERIT.

Odontoglossum crispum var. Backhouseanum, O. c. Kinlesideanum, and O. eximium xanthotes var. Madonna, from S. Gratrix, Esq.

Odontoglossum Modus (Doris × Rolfeæ), from John Walker, Esq.

FIRST-CLASS AWARDS OF APPRECIATION.

Odontoglossum crispum Ashiæ, and Odontioda Coronation delicata (Oda. Vuylstekeæ × Odm. eximium), from P. Smith, Esq.

CULTURAL CERTIFICATES.

To Mr. E. W. Thompson, for excellence of cultivation in the group of Odontoglossums exhibited.

To Mr. A. Burns, for Brassocattleya Apollo Wrigleyi.

A Gold Medal was awarded to P. Smith, Esq., Ashton-on-Mersey (gr. E. W. Thompson), for a remarkable group of choice Odontoglossums, a Silver Medal being also awarded to the Gardener.

A large Silver Medal was awarded to Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), for a fine general group.

Silver Medals were awarded to S. Gratrix, Esq., Whalley Grange (gr. Mr. J. Howes), and to Messrs. Cypher & Sons, Cheltenham, for fine general groups.

Capt. Horridge, Bury (gr. Mr. Coningsby), staged a group composed principally of Dendrobiums, with Odontoglossum promerens xanthotes, O. luteopurpureanum Vuylstekeanum; Lycaste Skinneri vars. John Horridge and Vesuvius, Cattleya Dusseldorfii Undine, and Miltonia vexillaria.

Col. Sir John Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton), staged a form of Odontoglossum Luptonii.

The remaining exhibits are included in the list of awards.

The annual meeting of the Society was held at 2.30 p.m., the Rev. J. Crombleholme presiding. The report and balance sheet were adopted. R. Ashworth, Esq., was re-elected President. The Vice-Presidents, with the addition of Mrs. Bruce and Miss Wrigley, Officials and Committee, including Messrs. A. Coningsby and E. W. Thompson in the Gardeners' Section, were also re-elected.

The prizes were presented as follows:—

Ashworth's Trophy to S. Gratrix, Esq. Gardener's prize to Mr. J. Howes.

J. J. Bolton's Gold Medal to S. Gratrix, Esq. Gardener's prize to Mr. J. Howes.

J. J. Bolton's Silver Gilt Medal to Mrs. Bruce and Miss Wrigley. Gardener's prize to Mr. A. Burns.

Royal Botanic Society of Manchester's Gold Medal to Mrs. Bruce and Miss Wrigley.

A. R. Handley's Prizes to Messrs. A. Burns, J. Howes, and J. Lupton.

Charlesworth's Object d'Art to S. Gratrix, Esq. Gardener's prize to Mr. J. Howes.

Cypher's Gold Medal to S. Gratrix, Esq. Gardener's prize to Mr. J. Howes.

A. Hanmer's Silver Cup to S. Gratrix, Esq. Gardener's prize to Mr. J. Howes.

McBean's Silver Trophy to P. Smith, Esq. Gardener's prize to Mr. E. W. Thompson.

W. Pickup's Gold Medal, to Mrs. Bruce and Miss Wrigley. Gardener's prize to Mr. A. Burns.

W. Pickup's Silver Gilt Medal, to S. Gratrix, Esq. Gardener's prize to Mr. J. Howes.

P. Smith's Prizes, to Messrs. A. Burns, J. Howes, and J. Lupton.

All the above Prizes are again offered for competition, with the exception of the Ashworth Trophy; this, by desire, will be given by Messrs. Hassall & Co., and in addition, Mr. J. Evans will offer a Gold Medal, with prize to gardener, for Dendrobiums.

It was decided that Prizes shall be provided for Cut flowers of Orchids only, not to be in competition with Plants; particulars to be settled by the Committee.

THE GENUS DIURIS.

THE Australian genus Diuris is not often seen in gardens, but a good specimen of D. maculata was sent to Kew from the Royal Botanic Garden, Glasnevin, in March, 1888, and two of the species have been figured in the *Botanical Magazine*. There are records of four species in cultivation, the earliest as long ago as 1813, when D. aurea is said to have been grown at Kew, the plant having been introduced from New South Wales, in 1810, by Mr. George Caley (*Ait. Hort. Kew*, ed. 2, v. p. 200). In 1832, what was called D. maculata was figured (*Bot. Mag.*, t. 3156), from a plant which bloomed at Kew in March, 1825, the bulb having been sent by Allan Cunningham two years previously. Lindley remarked that this plant was certainly not D. maculata, though he doubtfully referred it to his D. curvifolia (*Gen. & Sp. Orch.*, p. 507), but we identify it with the well-known D. sulphurea, R. Br. In 1875, D. alba, R. Br., was figured (*Bot. Mag.*, t. 6201), from a plant which flowered in the open border at Kew, the tuber having been received from Dr. Chas. Moore, Director of the Sydney

Botanic Garden. Lastly, we have the true D. maculata, Smith, which flowered at Glasnevin, as above pointed out.

When D. alba was figured, Sir Joseph Hooker remarked: "The beauty of the terrestrial Orchids in the Australian Colonies is proverbial. In spring and summer the meadows are in many places enamelled with them, and it is no unusual thing to find thirty or forty species in a comparatively limited area, comprised under the genera Diuris, Thelymitra, Prasophyllum, Glossodia, and Pterostylis, and in such quantities that bouquets may be made of them in any number, and I feel assured that in no other part of the world may so many different forms of Orchids be found in a given small area as in the Australian Colonies. Unfortunately, though easily procured and transported to Europe, they are cultivated there with great difficulty, flowering once only, if at all, and disappearing for ever after, a result probably due to our uncongenial seasons." Probably they would succeed better if grown inside, under something like Disa treatment.

About twenty species of Diuris have been described, and at least three are of suspected natural hybrid origin. They are rather Disa-like in habit, and the flowers are relatively large, and clear yellow in colour, sometimes with brown markings, but white and lilac-blue are also represented. They are characterised by the narrow or elongated lateral sepals and the spathulate petals. Probably more remains to be discovered about the natural hybrid question, and some observations by Fitzgerald are significant.

DIURIS SECUNDIFLORA, Fitzg., is only known from the Macleay River, where it was found growing in a small cluster on an open bank. The author remarks that it approaches D. alba, D. elongata, and D. pedunculata, and may possibly be a hybrid. The spike is one-sided, and the flowers yellow, with long green lateral sepals, and the stalk of the petals red-purple.

D. DENDROBIOIDES, Fitzg., is a rare plant, of which the author remarks: "The two plants observed by me grew close together in a field where numbers of D. elongata and D. pedunculata were in flower, and they may have originated from a cross between the two species." The flowers are of a peculiar purple-brown shade, while the first of the two suggested parents is lilac-blue and the other yellow.

D. TRICOLOR, Fitzg., though found in several localities, is suspiciously intermediate between D. abbreviata and D. elongata, with which and D. pedunculata it was found growing at Guntawang. The elongated lateral sepals are green, and the rest of the flower yellow, with some lilac-blue markings on the lip, and some similar veining at the base of the petals.

There is also a suspected natural hybrid between D. maculata and D. pedunculata, and an examination of localities where the species grow together might yield some interesting results.

R.A.R.

STAUROPSIS PARISHII & S. MARRIOTTIANA.

SOME considerable time ago Messrs. Stuart Low & Co., exhibited at a meeting of the R.H.S. good examples of the plants known in gardens under the names of Vanda Parishii and var. Marriottiana, and our attention was called to the marked differences between them. It is a point that we have long realised, as also that they do not belong to the genus Vanda at all, having entirely the structure of Stauropsis. In fact, when V. Parishii was originally described it was compared with V. lissochiloides and V. gigantea, which also belong to Stauropsis. We have again received flowers of the two, and a brief note on their history may be useful.

STAUROPSIS PARISHII, Rolfe, is the plant that was originally described by Reichenbach under the name of Vanda Parishii, in 1868 (*Xen. Orch.*. ii. p. 138), the species having been discovered in Burma six years earlier by the Rev. C. Parish. Some years later it was again met with, and living plants were introduced through Messrs. Hugh Low & Co., of Clapton (*Gard. Chron.*, 1870, p. 890). Subsequently a good figure appeared (*Orch. Alb.*, i. t. 15). It is a very attractive species, with bright green, very fleshy leaves, and an erect spike of large, greenish yellow flowers, copiously spotted with warm brown. Its precise habitat was not originally given, but the late Mr. R. Moore, the discoverer of Cypripedium Charlesworthii, has recorded that it is found near the Salween River (*O.R.*, iii. p. 170). The species is now flowering well in the Kew collection.

STAUROPSIS MARRIOTTIANA, Rolfe, was originally described by Reichenbach, under the name of Vanda Parishii var. Marriottiana (*Gard. Chron.*, 1880, i. page 743), from a plant which flowered in the collection of Sir William Marriott, Down House, Blandford. Three years later it was independently described from a plant which flowered at Kew, under the name of V. Parishii var. purpurea (N. E. Br. in *Gard. Chron.*, 1883, i. page 307). Both authors had considered the difference from V. Parishii as one of colour only, but there are others, especially in the shape of the flowers, the present one invariably having broader, rounder segments, which are bright purple at the base, passing into a shade of brown towards the apex. This is also figured in the *Orchid Album* (ii. t. 61), and a comparison of the two will show how marked are the differences. The habitat, again, is different, the present one, according to Mr. R. Moore (*O.R.* iii. p. 60), being fairly plentiful east of Lake Inle, in the Shan States. It also is grown at Kew, but is not yet in bloom.

The genus is widely diffused, from India and South China, tnrough the Malayan Archipelago and the Philippines to New Guinea. R. A. R.

SEXES OF CATASETUM RODIGASIANUM.

THE female flowers of a good many species of Catasetum are still unknown, but a plant of C. Rodigasianum at the Royal Botanical Garden, Glasnevin, has produced an inflorescence of each sex, which have been kindly sent by Sir Frederick W. Moore, with a view to completing the history of the species. This particular plant was obtained from Messrs. Sanders, St. Albans, in 1916. C. Rodigasianum is a native of Brazil, and was originally introduded from the province of Santa Catherina by Messrs. Linden, in whose establishment at Brussels it bloomed in June, 1890, when it was described and figured (Rolfe in *Lindenia* vi. p. 41, t. 259). We have several times seen the species since, but always until now with the male inflorescence only. The species belongs to the section Myanthus, and is an ally of C. Trulla, Lindl. The male flowers are numerous, borne in an arching raceme, and the lanceolate sepals and petals green, copiously blotched with brown. The lip is ovate, concave, with an involute, fimbriate margin, and a tridentate apex, the central tooth being thickened into a prominent callus, while the colour is greenish buff, with numerous ring-like red-brown dots. The column is elongated, and the antennæ slender, parallel at the base, then diverging on each side of the fieshy callus of the lip, and the anther case and pollinia are normal. The female flowers, as usual, are very different. Those sent are four in number, and borne in an erect inflorescence. The sepals and petals are shorter and broader than in the males, and the colour green, with numerous small, dark brown spots. The lip is uppermost, deeply saccate, very fleshy, with a neatly denticulate margin, and the colour light green, with numerous darker longitudinal veins inside, and a few dark brown dots outside. The column is very short and stout, with a concave stigma but without antennæ or pollinia. In addition to their very different appearance, the female flowers are rather over twice as heavy as the males, the four-flowered female inflorescence weighing rather more than the eight-flowered male, with about the same length of the rachis attached in each case. The male inflorescence is much fewer-flowered than usual, possibly because of the extra strain on the plant. It is interesting to obtain the females of another species of this remarkable genus, and it may be added that coloured drawings of both sexes have been made for preservation at Kew.

It may be added that there are now about twenty-five species of Catasetum of which both sexes are known, but this probably represents less than half the genus, and it is unfortunate that more of the species are not in cultivation at the present time.

R.A.R.

ORCHID NOTES AND NEWS.

THE Meetings of the Royal Horticultural Society are rather displaced by the holidays and the big shows. The Spring Show at Chelsea from May 20th to 22nd, falls between the ordinary meetings at the London Scottish Drill Hall on the 13th and 27th, after which there is a three weeks interval to June 17th, when the next ordinary meeting will be held. A week later comes a Floral Fete and Exhibition in the Chelsea Gardens, in aid of the R.H.S. War Relief Fund, the dates being June 24th and 25th, and the general arrangements similar to those of the Chelsea Show of a month earlier. Offers of cut flowers and plants to be sold for the Fund will be gratefully received. A week latter, on July 1st, an ordinary meeting will be held at the London Scottish Drill Hall, after which the meetings will resume their usual fortnightly character, the succeeding dates being July 15th and 29th. The hour of meeting of the Orchid Committee, except at the Chelsea Fete, is 11.45 a.m.

The Manchester & North of England Orchid Society has issued its programme for the 1919-1920 session, the dates of meetings being at follows :—June 5 and 19, July 3 and 17 (no meetings during August), September 4 and 18, October 2 and 16, November 6 and 20, December 4 and 18, January (1920) 8 and 22, February 5 and 19, March 4 and 18, April 1 and 15, the final meeting being fixed for May 6, when the Annual Meeting will also be held. The Committee meets at noon, and the exhibits are open to inspection from 1 to 4 p.m.

A set of four photographs has been sent by M. Th. Pauwels, showing details of the destruction of his Orchid Nursery at Meirelbéke on the night of November, 8th-9th last, as described at pp. 22, 23. They represent, respectively, a Cymbidium house, 25 metres long by 7 wide, an Odontoglossum seedling house, and two hybrid Cattleya houses, one of them 30 metres long by 7 wide. The latter is a picture of desolation, part of the roof and stage wrecked, the glass fallen in, the front slabs broken and displaced, and the plants lying about in all directions where they were thrown by the concussion. Two others show much the same condition of things, and it was impossible to save the plants after the bombardment was over, as they had been subjected to 3 to 7 degrees Centigrade of frost (equalling 6 to 14 degrees Fahrenheit). Fortunately, however, it was possible to save most of the Cymbidiums. One of the views will be given in our next issue.

From an announcement in our advertisement pages, it will be seen that

the fine Orchid collection of the late M. Jules de Crom is to be disposed of, and that the arrangements are in the hands of M. Th. Pauwels, of Meirelbeke, Ghent, to whom all enquires should be addressed.

ORCHIDS FROM BLENHEIM.—Two very beautiful Læliocattleyas are sent from the collection of His Grace the Duke of Marlborough, Blenheim, Woodstock, by Mr. J. T. Barker, who now has charge of the collection. Lc. Isabel Sander var. Distinction (C. Mossiæ Reineckeana vestalis × Lc. Canhamiana Marguerita) is excellent in every respect, the flower being of model shape, the sepals white, also the centre of the very broad petals, while the marginal third is suffused and mottled with lilac-rose. The lip is broad, prettily undulate, and brilliant carmine-crimson, with a deep yellow throat, slightly veined with purple. Lc. Diana (Lc. Baroness Schröder × C. Schrœderæ) is a charming thing, having flowers of good shape, and the sepals and petals of a nearly uniform rosy lilac, with a margin of the same round the lip, the greater part of which is taken up with a very large orange-yellow disc, extending to the base of the throat, the latter colour being derived from the Lælia Jongheana grandparent. It is a very promising hybrid, and the inflorescence at present is two-flowered.

THE BRITISH MARSH ORCHISES.—These interesting plants are again showing for bloom, and as several questions respecting them await solution, we shall be glad of observations from any of our correspondents, also specimens of any hybrid intermediates and of the species with which they grow intermixed. A correspondent suggests that experiments in raising them artificially should be made, and we commend the idea to those who grow them successfully. The difficulty is to raise the seedlings, and we have twice failed, though the seeds were sown in a bed where the parents succeed, and in one case also in a pot with one of the parents. The Rhizoctonia fungus was presumably present, but this does not compensate for possible imperfections in the cultural conditions. We shall be glad to hear of anyone who has been more successful.

ANSWERS TO CORRESPONDENTS.

C.W.—No trace of fungi can be found in the pseudobulb of Odontoglossum grande, and the damage appears to be purely mechanical, possibly the work of some insect. The wound has completely dried up, and young roots are now pushing from the base. Probably the damage will not recur.

E.T.—Please let the hybrid Dendrobium flower again. We cannot trace D. albosanguineum in it, and wonder whether it is not possibly a stray seedling of D. Frederickii.

S.T.—We regret that we do not recognise the Cypripediums without record of parentage. One of them is apparently undeveloped, and may improve next time of flowering. The other has C. Spicerianum blood in it, and is probably of complex origin.

C.H.L.—Many thanks. The small Hexadesmia is H. micrantha, Lindl. We hope to report on the others shortly.

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THE ORCHID REVIEW

Edited by R. ALLEN ROLFE, A.L.S.

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The Orchid Review

VOL. XXVII. JULY-AUGUST, 1919. NO. 319-320.

OUR NOTE BOOK.

THE Royal Horticultural Hall at Vincent Square is not yet available for the Society's meetings, but the fact that it was again possible to hold a Spring Show at Chelsea was a welcome return to old times, though there were many things to remind one that conditions are still far from normal. The plants, however, made a brave show, and the fact that four gold medals were included in a long list of awards testifies to the excellence of the display. The attendance was also good, though Continental visitors were very few in number, which is not surprising considering the limited facilities for travelling at the present time.

The Summer Show was a reminder of the strenuous times through which we have so recently passed, for it was a Special Exhibition of the War Horticultural Relief Fund, organised by the Society for sufferers in the countries of our Allies by the unexampled barbarities of the War. The Society's Committees did not meet, consequently there were no ordinary awards, but a number of Gold Medals were given by the Council, five of which went to Orchids. The weather was rather cold, and a gale on the eve of the show caused a good deal of anxiety and some damage, though the Orchids fortunately escaped. A report appears elsewhere, and on page 109 an illustration is given of part of the destroyed Nursery of M. Th. Pauwels at Meirelbeke, which was one of the tragedies of the War.

A correspondent, who alludes to the enormous progress that is being made in hybridising the Odontoglossum group, asks whether there are characters by which the wild Odontoglossum crispum can be distinguished from the multitude of blotched garden forms which bear the same name? We believe not. The difficulty is to ascertain what are the characters of O. crispum when uncomplicated by crossing. Blotched forms have always appeared in importations of O. crispum, and some of these were recognised as hybrids from the outset. But between these and typical O. crispum came a multitude of intermediate forms, grading away from the type in a way that defied any attempt to separate them from it by any definite

boundary, and they were called crispum varieties by default, though there was good reason to believe that some were secondary hybrids or hybrid reversions.

It was hoped that with the possibility of raising Odontoglossums by hand some of these difficulties would be cleared up, but the experiments have chiefly been made in other directions, and the best of these doubtful forms have again been used as parents with other showy species, and their offspring have naturally presented similar if not increased difficulties in classification. The parentage of several of the wild hybrids has indeed been confirmed by experiment, and much light has been thrown on the question by variation and reversion among hybrids of known parentage, but these results have not been recorded with the necessary exactness; in fact, reversions that are of no horticultural importance have a tendency to be lost sight of altogether. Some idea of the possibilities of the case may be formed by the way in which the interval between Odontoglossum and the quite distinct genus Cochlioda is being filled up by hybridisation, and yet the first of the series did not flower until fifteen years ago. One is tempted to wonder how these would have been classified had they appeared in nature, without any record of their origin. Students of natural hybrids have some difficulties to overcome besides that of a correct nomenclature.

The latter burning question is naturally among the points raised, and we welcome a desire for a nomenclature as closely as possible in accord with the facts, though it is often difficult to carry into practice. It is known, for example, that Odontoglossum crispum crossed with O. Hunnewellianum gives the hybrid O. Adrianæ, and that the latter recrossed with O. crispum gives O. Fascinator, which has also been recognised among imported plants, yet the variation of O. Fascinator towards O. Adrianæ on the one hand and towards O. crispum on the other, is such that one could not pick them out of a batch of imported plants with any degree of certainty. The same thing applies to O. mirum—O. Wilckeanum recrossed with crispum—and some other secondary hybrids of known origin. Such hybrids, when raised artificially, generally receive names in accordance with their parentage, whatever the amount of variation shown. And there are cases where the differences are so fine as to elude the most vigilant search, as for example the beautiful series of albinos known as Odontoglossum crispum xanthotes, O. eximium xanthotes and O. promerens xanthotes, and the remark is doubtless applicable to the corresponding coloured forms.

An alternative plan which has been suggested is to class all the hybrids from any given two species under a single name, but we do not think it

would work satisfactorily. To give an example: Cochlioda Noetzliana crossed with Odontoglossum crispum gave Odontioda Bradshawiæ, which has been recrossed with both the original parents, that with the Cochlioda being called Odontioda Elsie, and that with the Odontoglossum Odontioda Schrœderi. The alternative plan would be to class both the secondary hybrids under Odontioda Bradshawiæ, which we think would not be at all satisfactory. Had they all been natural hybrids the absence of records might have made such a course inevitable, unless indeed O. Bradshawiæ had been described as a species, which is highly probable, for a good many natural hybrids have shared this fate.

Among natural hybrids that have been recognised at the outset the alternative plan has doubtless been followed quite unconsciously, for their recognition as hybrids depended entirely upon the detection of characters derived from two distinct species. Odontoglossum Andersonianum was described as a natural hybrid between O. crispum and O. gloriosum because it combined the characters of these two quite distinct species. In course of time many other plants were recognised as containing the same combination of characters, and some of them received distinct names, but ultimately came to be classed under the same name, though the series doubtless contains recrosses with both the original species. In course of time the cross between O. Andersonianum and O. crispum was raised, and received the name of O. Stewartianum, and there are doubtless a good many wild forms of the same to be recognised. But who will recross O. Andersonianum with O. gloriosum to show us what the other secondary hybrid is like?

It is probable that the plant which Reichenbach called Odontoglossum hebraicum belongs here, for the narrow, light yellow segments and numerous small brown spots and lines are just what one would expect, but this plant was included as a variety of O. lanceans when Reichenbach collected the numerous hybrids from O. gloriosum and O. crispum under a single name. The name Odontoglossum glorioso-crispum was suggested by the writer as a natural method of keeping together forms having the same specific composition, but it implied nothing else, for it was remarked that some of the forms were probably secondary hybrids and polymorphisms produced by agencies that have been in operation for ages past. The whole problem is full of difficulty, and similar complications are already apparent among garden hybrids that have only been the subject of experiment for a few generations.

Hybridisation in nature is necessarily limited to the species which happen to grow together. The pollen is carried about by insects, and

hybrid seeds as well as pure seeds are developed and may germinate side by side. If the hybrids are fertile the intercrossing may be carried further, and there is ample opportunity for plenty of mixed ancestry and reversion. The plants are brought home by collectors, and on flowering present the different characters with which we are so familiar. There is no record of their origin, and they can only be classified by the characters they possess, pure or mixed as the case may be. Some of them have been unwittingly described as species, as the plants now known as Læliocattleya elegans and Lc. Schilleriana were, and those who recognised their mixed character have had to fight for their recognition as hybrids, until some experiment placed the matter beyond dispute. Others were recognised as hybrids from the outset, especially where they appeared in importations of known origin, while those of less definite character have sometimes been regarded as varieties of recognised species, occasionally with the cryptic remark that they showed a "touch of hybridity," a recognition of the possibility of their being hybrid reversions.

In the case of garden hybrids there need be none of this uncertainty. Everything is within rigid control. Nature knows no selection of parents, and keeps no records. The hybridist can do both. He can cross species which do not grow together, and he can recombine the offspring in any way he chooses, in the hope of getting the desired results. There are limitations, of course, and the result cannot always be foreseen, certainly not controlled, but plenty of good material is obtained for further experiment in whatever way improvement seems desirable. Surprises there will be, and plenty of variation and reversion, and it is this which supplies the clue to what is going on in nature. The results would be strictly comparable if experiments were limited to the species which grow together in a wild state, and the crosses made without selection of parents. A few more experiments on these lines might be carried out with the object of settling doubtful questions, and it would eliminate some of the difficulties of nomenclature. The object of horticultural experiment is novelty and improvement, and the inferior forms are inevitably neglected, and ultimately disappear. Varietal names can be given to the best and most distinct, the others being chiefly interesting as variations. In the absence of record we can only suggest classifying them under the recognised hybrid that they most resemble, as has to be done in the case of natural hybrids.

In the case of variations among seedlings from the same batch, or from batches of identical parentage, the adopted course is to bring them all under the same specific name, with the addition of distinguishing varietal names where desirable or necessary.

ORCHIDS AT HOME.

WHEN looking at living flowers of the remarkable genus Coryanthes, we have often thought how much more interesting it would be to see the plants in their native surroundings, and the point is emphasised in a graphic article on "Guiana Orchids, their insect friends and foes," by "J. R.," which appeared some years ago in the *Demerara Argosy*. The substance is here given, with an alteration in the name of the fertilising insect rendered necessary by subsequent enquiry:—

When I saw Coryanthes speciosa flourishing luxuriantly, with its oval mass of roots a nest for myriads of stinging ants, the questions naturally occurred to me: What is the connection between the insect and the plant? Is there any benefit or injury from the association? Did the Orchids grow on the ants' nest, or the insects make their home in the root of the plant?

These questions can be answered, thanks to Darwin, Lubbock, and other naturalists who have investigated the connection between ants and Orchids; and confirmed by my own observations in some cases. The Orchid being pendent from small branches, or creeping plants, it affords a secure asylum for the insects, in the same way that the mocking-bird's nest is hung from the outer branches of tall trees to preserve the brood from their enemies. It is certain that the Orchid suffers no injury from its tenants, but on the contrary, flourishes to perfection under such circumstances. That the plant does not originate upon the ants' nest is proved by the fact that young specimens are often found uninhabited, but with bunches of roots similar to the older ones. Ant plants derive benefits from their tenants from the fact that these are carnivorous, praying upon such pests as naked caterpillars, cockroaches, and plant mites. It is a common and interesting sight to watch a small regiment of ants carrying a cockroach up a wall, or attacking a live caterpillar; but when an army of yakmen or hunter ants make a raid, hundreds of plant eaters may be seen running, jumping, and crawling, to rid themselves of their tormentors, which hold on in spite of the big jumps of grasshoppers, or the rolling of caterpillars.

In growing these plants near the coast (their tenants having been evicted by the collectors), some difficulty is experienced to keep them free from cockroaches, which gnaw at the roots, and often kill the Orchids in a little time. In collecting them, the supporting branches are cut away quickly, and the whole plant dropped into the water, then pushed under with a long pole until the ants come to the surface. As may be supposed, the collector is almost certain to get well bitten, even with most careful management.

Although the Coryanthes is benefited by its freedom from cockroaches,

&c., there is one insect which (being essential to the propagation of the species) it is necessary to attract. The contrivances by which the insect is attracted are among the most wonderful in Nature. Below the bulbs hangs a flower-stem about two feet long, near the tip of which five to ten flowers are ranged. The texture of these flowers is fleshy, and probably attractive to cockroaches, but these vermin are kept away by the ants. It is rather difficult to describe the flower in popular language, but the general shape is like a cock, the place of the body being a cup, into which a liquid drips from the horn-like process above. When the flowers open, a number of briliant green bees are seen swimming in the liquid at the bottom. They have been attracted by the smell, which is something like stale meat, and flying at that part which stands above, they fall into the cup, wetting their wings so that they cannot fly out. The sides of the cup being deep and slippery, and the bee smeared over with the liquid, it cannot climb, but moves round and round like a cockroach in a tea cup, sometimes being drowned instead of finding the way out. It generally, however, finds its way to the only place of exit, where the column which contains the essential organs of fertilisation comes near to a gap in the cup. Some force is necessary, as the cup is like a spring door, and in pushing through the bee passes the stigma, ruptures the box containing the pollen, which, being glutinous, sticks to its back, and is carried off. The wings being smeared, it cannot fly, but crawls from one flower to another, and in going through the same process again carries the pollen and rubs it on the stigma, thus fertilising the seeds. Insect fertilisation of Orchids is by no means so certain as that of most other flowers. Seed vessels are rather rare, even on common species, not one in a hundred producing perfect seeds; but as one pod will have 20,000, or more, it is not so necessary for each to be fertilised, as in some other plants. I have often watched the bees doing what is here described, and even caught them with the pollen masses on their backs.

The species of Coryanthes show the best types of dependence on insect friends, but most of the species of Orchids are fertilised by, and many others provide homes for them. Diacrium bicornutum has hollow bulbs with small holes at the base, where the ants have their doorway. These bulbs are the perfection of ants' nests, their inhabitants being perfectly sheltered from rain or enemies.

A COLONY OF ORCHIDS.—Under the title, "The Flora of a single tree," Messrs. H. A. Longman and C. T. White record (*Proc. Bot. Soc. Queensl.*, xxix. pp. 64-69) a remarkable assemblage of plants growing as epiphytes on a single tree of the Bolly Gum (Litsea reticulata), which was recently felled in the subtropical rain-forest of the Tambourine Mountain, North

Queensland. The tree is a member of the Lauraceæ, and the timber is used locally for building purposes. In all fifty plants were found growing on this single tree, including seven species of Orchids, nine ferns, the semiparasitic Loranthus celastroides in full flower, and upon the latter the hyper-parasitic Notothixos cornifolius var. subaureus, or Golden Mistletoe. The Orchids were the so-called Rock Lily, Dendrobium speciosum, D. tetragonum, D. gracilicaule, D. teretifolium, Sarcochilus teretifolius, Sofalcatus, and Cleisostoma tridentatum. The latter grew on slender branchlets of the tree, but the others were attached to the trunk or main branches. There were several other flowering plants, but the majority of the species were made up of ferns, mosses and lichens, and these would provide suitable quarters for the other epiphytes. The assemblage of Orchids is interesting, and there is the possibility that under such conditions natural hybrids might occasionally be found, though we do not remember records of any that might be found in the above station.—R.A.R.

CYCNOCHES DIANÆ.

IT is with much pleasure that we are able to record the flowering of both sexes of another species of Cycnoches "on the same inflorescence," in the collection of Mr. C. W. Powell, Balboa, Canal Zone, Panama.

The females were three in number and the males five, and all are sent by Mr. Powell, but detached from the rachis. We believe they belong to C. Dianæ, Rchb. f., a species originally collected by Warscewicz on the Chiriqui Volcano, at 3000-4000 feet elevation, and described in 1852 (*Bot. Zeit.* x. p. 636), for the males agree well with two rather imperfect flowers of the type which were sent by Reichenbach to Lindley, and are preserved in the Herbarium of the latter. Nothing further, so far as we are aware, is known of the species, and the females have been hitherto unknown, so that Mr. Powell's materials are of more than ordinary interest. This plant was received from Mr. C. H. Lankester, Costa Rica, and it is believed to be the first time that it has flowered. Reichenbach described the flowers as blotched with brown, in which and various other details it agrees with the present one.

It will be interesting to give a summary of Mr. Powell's description, which was taken from the living plant. Pseudobulbs about seven inches long by one broad. Raceme from the upper leaf axil, arched and pendulous, about a foot long, bearing five male and three female flowers. Male flowers green, heavily blotched with rosy brown; lip green, with thirteen finger-like processes, the basal pair twice as broad as the others, and the apex of the lip an obtuse triangle with a rosy brown dot at its point; column

slender, curved like a fish-hook, bright rosy brown, with the apex broader, and green with rosy brown dots. Female flowers with rather broader, fleshy segments, green, with ivory white apex to the ovate convex lip; column shorter and stouter, with angular wings. It is interesting to note that the females all bear an anther case with abortive pollinia, these being carefully sent as well as those of the males, the latter being normal in character.

Reichenbach (*Beitr. Orch. Centr. Amer.*, p. 24) enumerated four species of Cycnoches from Chiriqui: 1, C. ventricosum, Batem.; 2, C. Warscewiczii, Rchb. f.; 3, C. aureum, Lindl.; and 4, C. Dianæ, Rchb. f., but he suggested that C. Warscewiczii might possibly be a sex of C. ventricosum. We, on the other hand, think it is probably the female of C. aureum, which was also collected at Chiriqui by Warscewicz, and of which the female is otherwise unknown. Unless Warscewicz had found the two growing from the same plant he would scarcely have connected them, for practically nothing was then known of sexuality in the genus, and the production of another kind of flowers on any given plant was then regarded as a mysterious kind of sporting. C. ventricosum and C. aureum belong to different sections of the genus, and we have more than once tried to get in touch with the latter handsome plant, but hitherto without success. The attention now being given to Central American Orchids may yet result in its rediscovery, as has been the case with the other interesting species to which this note is devoted. R. A. R.

ORCHIDS AT KEW.—Among a number of rare and interestlng Orchids now flowering at Kew may be mentioned a fine specimen of the Javan Eria rhynchostyloides, producing as many as three dozen spikes and making quite an attractive show. Maxillaria fucata is bearing several striking buff yellow flowers with red shading and markings. Lycaste leucantha has light green sepals and petals and a white lip. Pleurothallis hamata is a very free-flowering species from Costa Rica, and Scaphosepalum punctatum a rare species of a small genus that was formerly included in Masdevallia. The Sobralias are blooming freely, and include examples of S. macrantha, xantholeuca, Veitchii, Colmanii, and a pretty hybrid from S. macrantha alba crossed with S. Wavriniana, and having white sepals and petals and a yellow lip. There were also good examples of Vanda cœrulea, Lælia crispa, the natural hybrids Læliocattleya Schilleriana and delicata, Oncidioda Charlesworthii, and many showy members of the Cattleya group. Cœlogyne Veitchii is bearing a pendulous raceme of pure white flowers, and a plant of the graceful Angræcum Sanderianum bears two spikes. The quaint genus Stanhopea is well represented in the collection, those in bloom being S. oculata, Wardii and saccata, but others are over.

ORCHIDS IN BELGIUM.

AT page 99 we mentioned a set of four photographs of the destruction of M. Th. Pauwels' Orchid Nursery at Meirelbeke, on November 8th, 1918, and now we are able to give an illustration of the large Cattleya house, which justifies the remark that it is a picture of desolation, part of the roof and stage wrecked, the glass fallen in, the front slabs broken, and the plants lying about in all directions where they were thrown by the concussion.

Fig. 8. CATTLEYA HOUSE DESTROYED AT MEIRELBEKE.

The photograph received was $8\frac{1}{2} \times 6\frac{1}{2}$ inches in size, and we selected part of it, giving the details exact size, in preference to reproducing the whole, which would have involved a great loss in detail. No more graphic record could be given. This house was 30 metres long by 7 wide. A second photograph represents a seedling Cattleya house, and here the roof is wrecked, the plants thrown about, and the floor covered with broken glass and other debris. The wreck of a large Odontoglossum house might almost be described in the same terms, but here the rafters are more blown in on one

side, and lying about at various angles, while a lot of the plants are hurled under the stage on the opposite side. In the case of a large Cymbidium house, 60 metres long by 7 wide, part of the roof is blown away, also part of the side and end wall, while the remaining plants present a sorry spectacle. A large part of the stage is shown cleared, for in this case it was possible to save a large number of the plants, in spite of from 3 to 7 degrees C. of frost (6 to 14 degrees F.). Full details of the destruction were given at pp. 22-23, and we need only repeat that, of the main establishment, representing 3,000 square metres of glass, nothing remains, while of an annexe, four out of seven houses were put out of service, the remaining three, though much damaged, were repaired, and contain all the plants that could be be saved from the bombardment and frost. The illustration enables one to realise better the details of this appalling tragedy, which was aggravated by the fact that a severe frost stepped in to destroy what was left by the bombardment. We sympathise with M. Pauwels in such a serious loss, and we shall hope to hear at an early date that the mischief has been made good, so far as this is possible.

CALENDAR OF OPERATIONS FOR JULY-AUGUST.

By J. T. BARKER, Orchid grower to His Grace the Duke of Marlborough, Blenheim Palace, Woodstock, Oxon.

SINCE writing my last Calendar there has been a great change in the climatic conditions. From a wet and cold, almost sunless period, we came suddenly into unbroken sunshine, thus passing from one extreme to the other. Such drastic changes need watching by the cultivator, as much harm may accrue to the tender growths of many plants if they are exposed too suddenly to strong light. In the warmer divisions the increased heat and light has enabled the plants to make rapid growth, but in the cooler ones some pains has been necessary to keep the temperatures down to their normal level, and the atmosphere cool and moist; conditions which the inmates of this division revel in at this season.

The temperatures and general treatment advised for the summer months must be continued, and every encouragement given to the plants to make clean and healthy growths. Should adverse conditions prevail for a time, care will be necessary, after the brilliant sunshine we have recently enjoyed, that the plants enjoy all the light possible, the glass being kept free from dust and dirt. This specially applies to houses in or near towns, or in smoky localities.

VENTILATION AND SHADING, according to the outside conditions, will require considerable attention, while the growths are young; when more complete there is ample time to ripen or consolidate the bulbs, so that the

plants may produce flowers of the best quality. Whenever possible, the ventilators should be freely used in the different houses, and the fresh air thus admitted will be greatly appreciated by the plants. This free ventilation, and the increased amount of sun heat, necessitates the use of a great amount of atmospheric moisture, making conditions under which all Orchidaceous plants thrive; still, care must be taken that even this is not carried too far. During cool nights the plants should be allowed to get dry before nightfall. Plants grown under rational treatment as regards heat, light, and air, are better able to withstand any slight set backs they may meet with than those grown under hot, close, stuffy conditions. The health of the plants depends entirely upon the conditions provided for them, hence the necessity of careful observations of the outside conditions, especially when the changes are rapid.

The ventilation of the different houses depends entirely upon the class of plants grown in them, and small houses will require more attention than larger ones, as in the former the temperatures rise and fall more quickly, and in all cases Orchids resent a dry and parched atmosphere as much as a wet and cold one, therefore the ventilators must not be thrown open in a haphazard way, but a continuous circulation of fresh air should be admitted at all times without causing draughts. The cultivator would shun draughts himself, and he should be careful that his plants are not exposed to them, as they suffer in the same way. Perfect development of growth is only possible under suitable conditions, hence the necessity of watchfulness.

WATERING at this season needs careful attention, as the plants are in different conditions, some being in full growth and some only recently repotted, whilst others are well rooted and at rest. These different conditions must be carefully noted before applying water to the compost. Plants which are well rooted, and making rapid and vigorous growth, may receive liberal supplies, while those newly potted, and those which have not yet commenced to grow, must have it applied with care. In every case it is a wise precaution to see that the plant is dry before applying water to the compost. Orchids generally speaking make more roots in a moderately dry compost than in one continually saturated with moisture.

POTTING.—Many persons will this season still suffer from the shortage of material and labour, though not to the same extent as formerly. Owing to this trouble, it will be advisable to hold over plants that are in a sweet and healthy compost, repotting those in which the rooting material is found to be sour and decomposed. No plant can make satisfactory root growth in a decomposed material, hence the necessity of repotting when the material becomes in that condition. A sweet, healthy compost is of the first importance, and the best is easily spoilt by the misuse of the water pot. An opportunity will occur when repotting to re-stage the different varieties,

placing them as far as possible in batches which require the same treatment, and this will make the treatment easier and more simple.

SEEDLINGS will now be making progress, and as they require new rooting material, repotting should be attended to, while those that are on the seed beds should be pricked out as soon as they attain sufficient size. The one great aim in growing seedling Orchids should be to keep them centinually growing, as time lost cannot be regained. Many seed pods will now be approaching maturity, and directly the seed is ripe it should be sown on prepared pots, or around the base of an established plant, according to its respective family. Seedling raising at the present day is much better understood than formerly, and most growers have now some experience with the methods explained.

VANDAS.—As such plants as Vanda teres and V. Miss Joaquim pass out of bloom, any necessary repotting should be attended to. Those that are leggy should have their stems cut off so that the bottom leaves just rest on the top of the new compost. Five or six stems should be placed in a well-drained pot, each stem being tied firmly to a neat strong stake, the pots then being surfaced with growing sphagnum moss. For a few weeks after disturbance, the plants should be carefully shaded, and by that time many young roots will have started, if a moist atmosphere has been maintained. When the new roots are nicely away, and new growth pushing, the plants may be gradually exposed to direct sunlight. The remaining parts of the old stems, under the same treatment, will soon send out fresh growths, and these new shoots, if they grow well, may be removed next season, thereby increasing the stock. It may be necessary now to look to home production for the increase of many Orchids which in the past were imported in large quantities, as importations will probably be limited in the future. During active growth, these Vandas should have plenty of sunshine and copious syringings overhead several times a day. A warm, sunny corner in the hottest house will make suitable quarters for these heat-loving plants whilst making their growths. The rare V. Hookeriana generally flowers at this season, and when the blooms are over should be attended to as advised for V. teres. V. Kimballiana and its variety alba, with V. Amesiana and Renanthera Imschootiana, should be grown in a sunny position in the Cattleya house, where fresh air can circulate freely around them. Such plants as V. cœrulea, tricolor, suavis, and others, which were cut down and repotted in the spring months, and are now well rooted and re-established, may be inured to more light and air to consolidate the new growth, otherwise there is danger of spot attacking them when the cold days and nights of autumn come.

CATTLEYAS AND ALLIES.—The general principles of culture laid down in previous Calendars may be applied to this large and popular group.

Plants of Cattleya Warscewiczii (gigas) that have recently gone out of bloom, also those that have completed their season's growth without flowering, should now be exposed to more sunlight and air, and placed in slightly cooler quarters. They should still be afforded water whenever they become dry, but much less will suffice than when in active growth. The repotting of this Cattleya and its varieties should be done, if needful, immediately new roots are observed to be pushing from the last made pseudobulbs. After repotting, only sufficient water will be needed to prevent undue shrivelling of the pseudobulbs or the roots from perishing. They will then enter upon a long season of rest, so far as top growth is concerned, but the roots will continue to extend through the new compost right through the winter months, provided the proper conditions are maintained. During winter a dry, airy position in the Warm Cattleya house, where they receive all the light possible, will provide suitable quarters for them. There are other species of this large family, and innumerable hybrids, which may be treated precisely in the same manner. A season of rest and growth for plants which have attained their normal stature should be carefully observed.

CYPRIPEDIUMS of all sections, being now well rooted, must onwards have copious supplies of water, as if allowed to become dry for any length of time they are readily attacked by thrips, which soon disfigure their tender foliage. During fine, bright weather these plants may be syringed or sprayed once or twice a day, which will be the means of keeping attacks of insect pests down and the plants clean. Clean soft tepid water should only be used for this purpose.

MILTONIA VEXILLARIA AND ITS HYBRIDS.—Towards the end of August the majority of these plants will have made sufficient growth for any necessary repotting to be done. This operation may be carried out any time during July and August provided the young growths are about to push forth roots from the base. There was a time when these plants were potted in the early spring months, but after careful observation I was convinced many years ago that this was not the best season to undertake this work, and time has thoroughly convinced me of its correctness. If potted any time during the two later months mentioned, they get thoroughly established before the winter, and make most satisfactory growth, and produce good flowers. Being surface rooters, they are best grown in half pots or deep pans, as if a great depth of material is used the best results are not attained. After potting, water must be sparingly applied until the roots freely enter the new material, which should be of the same nature as that used for Odontoglossums. A moist position in the Intermediate house, where they can be shaded from strong sunshine, answers their requirements at this season, or in warm districts the warm end of the Cool house is

suitable. The late flowering varieties are best deferred to a later period before attempting repotting. Their culture is similar, but their later period of growth necessitates a corresponding delay in the time of potting.

ODONTOGLOSSUM CRISPUM AND ALLIES.—Towards the end of August a start should be made to repot any Odontoglossums of this class that may require it. Plants of which the new growth has attained the length of several inches, and are about to produce new roots, should have attention first, to be followed by others as they reach this stage. As many as possible should be repotted at this season, as the plants quickly re-establish themselves. Large pots should not be used, and the old rootless and leafless pseudobulbs should be removed. A suitable compost is made up of equal parts of peat, AI fibre, and sphagnum moss, with a slight addition of broken leaves.

ODONTIODAS.—The hybrids between Cochlioda and Odontoglossum are now becoming very numerous, and as their colour is highly desirable, they are worthy of extended culture. They succeed under similar conditions to Odontoglossum, and in the same compost. They are of very diverse parentage, and naturally show much disparity constitutionally, some being more vigorous than others. There are other inmates of the Cool house that require repotting at this season, including the different Maxillarias. For such species as M. Sanderiana, and others which produce their flowers in a downward direction, shallow teak wood baskets make the best receptacles. For the others pots or pans are suitable, and all will succeed in a mixture of AI fibre, or osmunda fibre when obtainable, mixed with a small quantity of sphagnum moss.

ONCIDIUMS.—O. concolor, Phalænopsis, dasytyle, nubigenum, Lawrenceanum, Mantinii, Marshallianum, varicosum, and others that have started into growth, may also be repotted. A similar compost to that used for Odontoglossums may be used for these plants, to which slightly more leaves may be added.

DENDROBIUMS.—Before another Calendar appears many plants of the deciduous section of this large genus will be completing their growth, and when this has been finally made it is necessary to remove the plants to a cooler and drier atmosphere, where they should receive the benefit of extra sunlight and air, so as to consolidate and thoroughly bring the newly-made growths to maturity. It is not always advisable to remove the plants immediately they appear to have finished growth, for at this time the roots extend actively, throwing out laterals, thereby gathering strength to bear uninjured the strain of flowering. Such free-flowering sometimes suffers by exhaustion, hence the desirability of taking steps to counteract it.

GENERAL REMARKS.—The work for the two months under consideration will consist largely of the general routine of potting, watering, cleaning,

&c. On these small matters the success of Orchid growing largely depends, and if the temperatures and atmospheric moisture receive proper attention success is bound to follow. We have not yet reached normal conditions, but we may look forward to a better time coming for Orchid culture in the not distinct future.

ORCHIDS FROM EXETER.

A FEW interesting Orchids are sent from the collection of J. J. Neale, Esq., of Kenton, near Exeter (gr. Mr. E. Swinden). Miltonia vexillaria Queen Alexandra is a charming white form of the species, the flower sent being finely developed, and one of a spike of six. Two flowers of a fine round form of Odontoglossum crispum, from a spike of ten, are also noteworthy, the pure white petals being nicely fringed, and the sepals nearly as broad, with about three light purple spots above the middle. The lip is broad, with a chestnut brown blotch in front of the crest, numerous small spots at the sides, and a dotted basal margin, this character suggesting some possible O. Hunnewellianum in the ancestry. A spike of Gongora galeata, Rchb. f., recalls an interesting old plant, perhaps better known in gardens under Lindley's name of Acropera Loddigesii, though the genus Acropera is hardly distinct from Gongora. The flowers are buff-brown, and produced in pendulous spikes. Lastly, there is a Lycaste, with light-green sepals and a white lip, which belongs to L. leucantha, Klotzsch, a Costa Rican species which is not common in gardens.

Mr. Neale writes that he is just commencing to build a large Cool house, as the climate near Exeter is rather warm, and Odontoglossums do not succeed well unless in a specially constructed house. It is interesting to hear of renewed activity after this disastrous war, and we have little doubt that the experiment will prove successful, for Mr. Neale is an experienced Orchidist, and has long grown a varied collection in which botanical Orchids occupy a prominent place. He is fortunate in having an abundance of sphagnum moss and peat fibre on the estate, which in such difficult times is important from an Orchid lover's standpoint.

HYBRIDS TRUE FROM SEED.—We do not remember to have seen a truly cleistogamous flower of any hybrid Orchid, but there is a record that flowers of Calanthe gigas and Epidendrum O'Brienianum have set capsules apparently without any external aid, and that in the latter case seedlings were raised from the capsules so produced, and the resulting progeny conformed strictly to the parent plant. It is apparently another case of a hybrid coming true from seed.

DENDROBIUM GIBSONII.

THIS handsome yellow Dendrobium is not at all common in cultivation, but an inflorescence has been receivcd for determination through Mr. F. J. Hanbury, Brockhurst, East Grinstead, who remarks the general resemblance to the spring-blooming D. fimbriatum var. oculatum. The species was originally described in 1838 (*Paxt. Mag. Bot.*, v. p. 169, with plate), on the occasion of its first flowering at Chatsworth. It was collected in the Khasia Hills by Gibson, who remarks how he saw it in bloom at the door of one of the native huts, and on hastening to the spot found it to be the same plant that he had found growing on rocks at 3000 feet altitude.

A year later the same species was described by Lindley under the name of D. fuscatum (*Journ. Linn. Soc.*, iii. p. 8), being based upon materials collected in the Khasia Hills and in hot valleys in Sikkim, and it was afterwards figured from a specimen believed to have been imported from Khasia (*Bot. Mag.*, t. 6226).

There are some curious complications in the history of the species. When Lindley described D. fuscatum he overlooked D. Gibsonii, and when afterwards figuring the latter (*Paxt. Fl. Gard.*, ii. p. 133, fig. 204), he made no mention of D. fuscatum, but remarked of D. Gibsonii: "Its nearest ally is D. fimbriatum, with which we have reason to thiuk it is sometimes confounded," and he added, "We find it in our Herbarium from Griffith, gathercd on Mango trees in the province of Tenasserim." This probably supplies the clue to the confusion. There are two dried flowers of Paxton's original D. Gibsonii, preserved in a paper capsule which is attached to the sheet containing Grlffith's specimens labelled D. fimbriatum, which latter are not identical with the two separate flowers mentioned. This confusion was unnoticed by Sir Joseph Hooker when uniting D. fuscatum with D. Gibsonii, hence the inclusion of Burma in the distribution. We have seen no authentic specimens from there, but Dr. Henry collected it in Yunnan a few years ago, with several other Himalayan Dendrobiums. In Sikkim, according to King & Pantling (*Orch. Sikkim*, p. 58, t. 51), it occurs at elevations of 2000 to 5000 feet, flowering in July and August, while D. fimbriatum oculatum blooms from March to May. They were unable to find the western D. fimbriatum there, though Eurma is included in its distribution, and thus the identity of the Burmese plant, of which we have only seen dried specimens, requires confirmatiou. It is possible that more than one species has been included under D. fimbriatum, but the yellow racemose Dendrobiums are difficult from dried specimens.

R. A. ROLFE.

ODONTOGLOSSUM GRANDE.

ODONTOGLOSSUM GRANDE is a very handsome autumn-blooming species, whose general character is well shown in the annexed illustration of a plant from the collection of the late A. J. Oakshott, Esq. It was grown at the warmest end of the Cool house, in the ordinary Odontoglossum compost. Plenty of air is given whenever possible, and the plants like rather more light during the summer than the crispum set. During the growing season an occasional watering with weak liquid manure is

Fig. 9. ODONTOGLOSSUM GRANDE.

found beneficial, also damping among the pots with soot water. After flowering is over, they are kept fairly moist for a few weeks, which enables them to make fine bulbs, after which the supply is reduced, but they are never allowed to become dry enough for the bulbs to shrivel. Under this treatment the plants do not deteriorate in vigour, and nine perfect flowers have been produced on a spike. Another photograph shows a plant in a 10½ inch pan, bearing fifty-five fine flowers. The species is a native of Guatemala, and was introduced by G. Ure Skinner about eighty years ago.

SOCIETIES.

ROYAL HORTICULTURAL.

AFTER a lapse of two years the R.H.S. has resumed its Annual Spring Show, in the grounds of the Royal Hospital, Chelsea, the dates being May 20th to 22nd. Owing to transport and labour difficulties the arrangements were on a somewhat reduced scale, but the event was a great success, the exhibits being numerous and of excellent quality. The weather was brilliant, with a somewhat cool breeze, so that the temperature in the tents never became oppressive. The attendance was good, and among the distinguished visitors were Queen Alexandra, the ex-Empress of Russia, Princess Victoria, and the Duke of Connaught, while a number of French, Belgian, and Dutch horticulturists were also present. There was a brilliant display of Orchids, and the Coronation Cup, offered for the most meritorious exhibit in the Show, was won by Messrs. Armstrong and Brown, with a magnificent group of these plants. Four gold and six other medals went to Orchids, with four First-class Certificates, fourteen Awards of Merit, one Preliminary Commendation, and one Cultural Commendation, these out of about fifty exhibits entered.

Orchid Committee present: Sir Harry J. Veitch (in the Chair), J. O'Brien (Hon. Sec.), H. G. Alexander, Pantia Ralli, F. K. Sander, A. Dye, H. J. Chapman, W. H. White, A. McBean, W. H. Hatcher, S. W. Flory, Walter Cobb, E. R. Ashton, W. Bolton, J. Charlesworth, J. Cypher, R. G. Thwaites, Stuart H. Low, R. A. Rolfe, and Sir F. W. Moore.

FIRST-CLASS CERTIFICATES.

BRASSOCATTLEYA SPECIOSA GATTON PARK VAR. (C. Schrœderæ albens × Bc. Maronii var. Fortuna).—A large and particularly beautiful albino, with the disc of the lip yellow. Exhibited by Sir Jeremiah Colman, Bart.

LÆLIOCATTLEYA EXCELSIOR ASHTEAD PARK VAR. (C. Mendelii × Lc. Canhamiana alba).—A large and very beautiful variety, with broad white segments, and the lip rose-purple in front. Exhibited by Pantia Ralli, Esq.

SOPHROCATLÆLIA ANZAC VAR. GENERAL BIRDWOOD (Lc. Dominiana × Scl. Marathon).—A large and brilliantly-coloured variety, the sepals and petals rich reddish rose, and the lip deep crimson, with much yellow veining in the throat. Exhibited by Messrs. Charlesworth & Co.

SOPHROCATLÆLIA ANZAC VAR. LUTETIA (parentage as preceding).—Another charming variety, the flower being compact in shape, and carmine-rose throughout. Exhibited by Messrs. Charlesworth & Co.

AWARDS OF MERIT.

BRASSOCATTLEYA AIDA ORCHIDHURST VAR. (C. Mendelii × Bc. Maronii).

—A beautiful blush-white flower of excellent shape, and with a bright yellow disc to the lip. Exhibited by Messrs. Armstrong & Brown.

ODONTIODA AUTOMA VAR. MAY (Oda. Bradshawiæ × Odm. Harryanum).—A well-shaped, blownish-purple flower, with some irregular white lines on the sepals, and some similar markings on the petals. Exhibited by Messrs. Charlesworth & Co.

ODONTIODA DULCIES VAR. MILITARIS (Oda. Cooksoniæ × Odm. illustre).—A brilliant cherry-red variety. From Messrs. Charlesworth & Co.

ODONTIODA GLADYS VAR. INVICTA (Oda. Bradshawiæ × Odm. Pescatorei).—A very handsome variety, with large rosy flowers, well marked with maroon-purple. Exhibited by G. W. Bird, Esq., Manor House, West Wickham (gr. Mr. Redden).

ODONTIODA JOAN VAR. ILLUSTRIS (Oda. Charlesworthii × Odm. armainvillierense).—A richly-coloured form, the flower being dark chocolate purple with some white markings on the lip. Exhibited by Messrs. J. & A. McBean.

ODONTIODA THELA (Oda. Coronation × Odm. percultum).—A handsome hybrid, most like the former parent in general character. Exhibited by Messrs. J. & A. McBean.

ODONTIODA THE DELL DUCHESS (parentage unrecorded).—Apparently a fine form of O. Coronation, and the flowers heavily blotched with scarlet-red on a white ground. Exhibited by Baron Bruno Schröder, The Dell, Englefield Green (gr. Mr. J. E. Shill).

ODONTOGLOSSUM APHRODITE VAR. NORA (eximium × President Poincaré).—A handsome form, richly blotched with violet-purple, the margins of the segments, and the apex of the well-spotted lip white. Exhibited by Messrs. Charlesworth & Co.

ODONTOGLOSSUM BROWNII (Mars × crispum).—A very fine hybrid, having broad, claret-red sepals and petals, margined with white, and a white apex to the lip. Exhibited by Messrs. J. & A. McBean.

ODONTOGLOSSUM CRISPUM VAR. LINDA.—A beautiful white form, having very round flowers, with a cluster of dark spots on the segments. Exhibited by Messrs. J. & A. McBean.

ODONTOGLOSSUM CRISPUM XANTHOTES PRINCESS MARY.—A charming flower, of excellent shape, with bright yellow spots on the sepals and lip. Exhibited by Messrs. Charlesworth & Co.

ODONTOGLOSSUM DOREEN (eximium × Empress of India).—A large and handsome hybrid, blotched with claret-red on a lilac ground, and the apex of the lip white. Exhibited by Messrs. Charlesworth & Co.

ODONTOGLOSSUM EXIMIUM LEONORA (crispum × armainvillierense).—A brilliant form, the flowers being of excellent shape, with the inner two-thirds of the segments ruby-red. Exhibited by Messrs. J. & A. McBean.

ODONTOGLOSSUM KING EMPEROR (Colossus × crispum Leonard Perfect).—A large and handsome hybrid, the flowers white, with large red-brown blotches. Exhibited by Messrs. Armstrong & Brown.

PRELIMINARY COMMENDATION.

ODONTIODA SCHRŒDERI VAR. GOLIATH.—A very distinct variety, with a large, fawn-coloured flower, the lip somewhat browner and white at the apex. Exhibited by Messrs. Charlesworth & Co.

CULTURAL COMMENDATION.

CATTLEYA MOSSIÆ ARNOLDIANA.—To Mr. Farnes, Orchid grower to Pantia Ralli, Esq., for a well-grown specimen.

GENERAL EXHIBITS.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), staged a large and brilliant group, including an extensive series of hybrids and many interesting species. Odontiodas and Odontoglossums were numerous and excellent, the latter including a dozen varieties of O. crispum, among which the varieties solum and Lady Jane were conspicuous. Cattleya was well represented, and included both coloured and albino forms, with some choice Brassocattleyas and many good Læliocattleyas. It is impossible to give more than the salient features of such a group, in which about thirty genera and some 120 species and hybrids were represented, but we also noted several fine varieties of Lycaste Skinneri, Warscewiczella discolor and Wendlandii, the orange-red Polystachya paniculata and P. pubescens, Masdevallia triaristella, O'Brieniana and several others, the feathery-lipped Bulbophyllum barbigerum, Cirrhopetalum Collettii, species of Stelis, Spathoglottis Colmanii, Dendrobium Prince Arthur (regium × Euryalus), and D. Alpha, Maxillaria Sanderiana, Cymbidiums, &c., the whole of them well grown and very effectively arranged.

Pantia Ralli, Esq., Ashtead Park (gr. Mr. Farnes), staged a good group of well-grown plants, including Cattleya Warneri alba, some good C. Mossiæ and others, Lælia purpurata, some excellent Læliocattleyas, Odontiodas, and Odontoglossums, the latter including the O. crispum varieties Oakfield Sunrise, Lady Jane, aureum Holdenii, and Black Knight (of the Black Prince type), with a dozen others, Odontioda Chantecler, &c., while in front was a cluster of splendidly grown Sophronitis grandiflora covered with scarlet flowers (Silver-gilt Flora Medal).

H. S. Goodson, Esq., Fairlawn, Putney (gr. Mr. Day), showed Odontoglossum percultum Goodson's var., bearing a fine spike of richly-coloured flowers.

Richard Ashworth, Esq., Ashlands, Newchurch, Manchester, showed a very dark form of Odontioda Brewii.

Messrs. Armstrong & Brown, Tunbridge Wells, staged a magnificent group of Orchids, which gained a Gold Medal, and the Coronation Cup for

the most meritorius exhibit in the Show. The arrangement was most artistic, and took the form of three high, convex elevations, the centre consisting largely of brilliant Odontiodas and white Odontoglossums, and the side elevations of coloured Odontoglossums and Miltonias, the front of the group consisting largely of well-grown Cattleyas, Læliocattleyas, and other showy things. Noteworthy forms were O. crispum Snowdrift, a beautiful white, with the blotched varieties, Invicta, His Majesty, and Melba, O. Armstrongii var. Peerless, the pure white Cattleya Mendelii Sir Harry J. Veitch, well-bloomed examples of Miltonia Phalænopsis, M. Venus Orchidhurst var., Cypripedium bellatulum, &c., &c., with a number of promising seedlings in front.

Messrs. Charlesworth & Co., Haywards Heath, staged another brilliant and very varied group, arranged in undulating fashion, and remarkable for the profusion of hybrid Odontoglossums, white and blotched, Miltonias and Odontiodas, the latter giving a particularly bright effect. The other popular genera were also well represented, and we noted fine examples of Cœlogyne Dayana, Cypripedium Rothschildianum, Vanda teres and suavis, Renanthera Imschootiana, Cirrhopetalum Collettii and picturatum, Dendrobium Dalhousieanum, some well-bloomed Anguloa Clowesii, Bulbophyllum saurocephalum with a profusion of its red spikes, Saccolabium ampullaceum, Trichopilia Backhouseana, and many other interesting species, with Cattleyas, Læliocattleyas, Brassocattleyas, some brilliant Sophronitis hybrids, &c., the group deservedly gaining a Gold Medal.

Messrs. J. & A. McBean, Cooksbridge, also received a Gold Medal for a rich group, effectively arranged in three undulating banks, and containing a brilliant series of Odontoglossums and Odontiodas, some good Cattleyas and Læliocattleyas, Masdevallia Veitchiana and Harryana, Oncidium McBeanianum, and others; Miltonia vexillaria, and many fine hybrids, Cymbidium Lowianum and var. concolor, and other showy things, the whole in splendidly grown examples.

Messrs. J. Cypher & Sons, Cheltenham, staged a fine group, in which Læliocattleyas were a prominent feature, one plant of Lc. Fascinator bearing twenty-two flowers, while the other popular genera were also well represented. We noted some good examples of Anguloa Clowesii, Lælia purpurata, Vanda cœrulescens, Dendrobium Dalhousieanum luteum, Oncidium concolor, a nice lot of Cypripedium callosum Sanderæ and Maudiæ, Miltonia Phalænopsis, the scarlet Cochlioda Nœtzliana, Cirrhopetalum Collettii, some brilliant Masdevallias, Odontiodas, Odontoglossums, Cattleyas, and others (Silver-gilt Flora Medal).

Messrs. Flory & Black, Slough, staged a fine group, including some good Læliocattleya Fascinator, Lc. H. T. Pitt (Lc. bella × C. Enid), a richly-coloured hybrid, Lc. Dominiana, and others, Cattleya Empress Frederick

var. Vesuvius, rich crimson, C. Mossiæ Wageneri, a beautiful series of Odontiodas and Odontoglossums, noteworthy among the latter being O. Miriam, having large rosy-mauve flowers, with some white spaces on the segments and the front of the lip white. The group was rich in detail and very effectively arranged (Silver-gilt Flora Medal.)

Messrs. Stuart Low & Co., Jarvisbrook, staged a rich and varied group, in which Læliocattleyas, and white and coloured Cattleyas were numerous and good, while some well-bloomed Renanthera Imschootiana, Phalænopsis amabilis, a series of Odontoglossum crispum and blotched hybrids, some showy Odontiodas, white and coloured Lycaste Skinneri were noted, with the violet-blue Dendrobium Victoria-Regina, D. Phalænopsis album, D. Brymerianum, a fine Miltonia Roezlii, Arpophyllam spicatum, the remarkable Cattleya intermedia Aquinii, Maxillaria Houtteana, the feathery-lipped Bulbophyllum barbigerum, Cypripediums, Epidendrums, &c. (Silver-gilt Flora Medal).

Messrs. Mansell & Hatcher, Rawdon, staged a very effective group, in which white and blotched Odontoglossums and richly-coloured Odontiodas were arranged with some good Miltonias, Cattleyas, Læliocattleyas and Brassocattleyas, with some well grown Cypripedium niveum and allies, Renanthera Imschootiana, Zygopetalum maxillare, Dendrobium Thwaitesiæ, Trichopilia Backhouseana, a fine Cœlogyne pandurata, and others. Odontioda Brewii Rawdon var. was a fine dark-coloured form, while O. Sunbeam, O. Cooksoniæ, and O. Edith Hodgson were also noteworthy (Silver-gilt Flora Medal).

Mr. H. Dixon, Spencer Park Nursery, Wandsworth Common, staged a good group of showy species and hybrids, including Cymbidum insigne, C. Lowianum and var. concolor, C. tigrinum, the richly-coloured Sophrocatlælia Pandora, Dendrobium Owenianum, Odontoglossum platychilum and some good O. crispum and blotched hybrids, Cattleya Mendelii and Mossiæ, Læliocattleya callistoglossa magnifica and the bright yellow Lc. Helius, and some good Miltonias and others (Silver Banksian Medal).

Messrs. Sanders, St. Albans, staged a group of about fifty plants of Cymbidium insigne, showing a good deal of variation, and some of the plants bearing three fine spikes. A Certificate of Appreciation for the introduction of this fine species was awarded.

An ordinary meeting was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on May 27th, the week following the Chelsea Show, and the exhibition and attendance was naturally small, though a few good Orchids put in an appearance, the award list being as below :—

Orchid Committee present: Sir Harry J. Veitch (in the Chair),

J. O'Brien (hon. sec.), T. Armstrong, W. Bolton, W. H. White, and F. J. Hanbury.

AWARDS OF MERIT.

LÆLIOCATTLEYA EXCELSIOR VAR. THE GLOBE (Lc. Canhamiana alba × C. Mendelii).—A large and beautiful variety, having white sepals and petals, the latter with a broad lilac-mauve band up the centre, and the lip rich purple, with a yellow disc and a narrow white margin. Exhibited by Pantia Ralli, Esq., Ashtead Park (gr. Mr. Farnes).

ODONTOGLOSSUM HARVENGTENSE PITT'S VAR.—A particularly fine form, having light canary yellow sepals and petals, blotched with brown, the disc of the petals white, and the broad lip with a large chestnut red blotch and a few smaller ones. Exhibited by H. T. Pitt, Esq.

CATTLEYA THE BRIDE (Warscewiczii alba × Dusseldorfii Undine).—A very charming albino, the three flowers being of excellent shape and pure white throughout. Exhibited by Messrs. Flory and Black.

PRELIMINARY COMMENDATION.

ODONTOGLOSSUM TITYUS (spectabile × President Poincaré).—A large and perfectly-shaped flower, with violet-purple blotches on a white ground. Exhibited by Messrs. Charlesworth & Co.

GENERAL EXHIBITS.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), received a Silver Flora Medal for an excellent group, containing two fine specimens of Cœlogyne pandurata, each bearing two spikes of its green and black flowers, examples of C. speciosa and Massangeana, Epidendrum prismatocarpum and Wallisii, Renanthera Imschootiana, Lycaste Lawrenceana, Bulbophyllum siamense, Maxillaria lepidota, the fringed Nanodes Medusæ and Chondrorhyncha Chestertonii, and a number of good Cattleyas, Odontiodas and Odontoglossums.

Messrs. Charlesworth & Co., Haywards Heath, staged a choice group, including the handsome Miltonia Charlesworthii, Læliocattleya Fascinator-Mossiæ var. Princess Bibesco, having lilac-pink sepals and petals and a claret-purple lip, Cattleya Ardenholme var., and a few other good things.

The next ordinary meeting was held on June 17th, when there was a good display of choice Orchids, and the awards consisted of four Awards of Merit, one Preliminary Commendation, two Cultural Commendations, and two medals.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), W. Bolton, Arthur Dye, F. J. Hanbury, W. H. White, C. J. Lucas, W. J. Kaye, S. W. Flory, T. Armstrong, C. H. Curtis, F. K. Sander, Sir Harry J. Veitch, Walter Cobb, R. J. Thwaites, Pantia Ralli, and R. A. Rolfe.

AWARDS OF MERIT.

LÆLIOCATTLEYA SAN JUAN VAR. VICTORY (C. Mendelii × Lc. Aphrodite).—A large and handsome variety, with lavender-blush sepals and petals, and the front of the lip rose-purple, with a yellow throat. Exhibited by Mr. C. J. Waters, Deanlands Nursery, Balcombe,

ODONTIODA WEST POINT BEAUTY VAR EXQUISITA (Oda. Bradshawiæ × Odm. eximium).—A brilliant scarlet-red hybrid, with blush-white markings at the apex of the petals and lip, and the crest yellow. Exhibited by Sir Jeremiah Colman, Bart.

ODONTOGLOSSUM MIGUELITO (Dora × Doris).—A striking thing, the flowers being large and finely-shaped, the colour claret-red, with whitish markings at the apex of the sepals and petals, and the apex of the broad lip white. From Dr. Miguel Lacroze, Bryndir, Roehampton (gr. Miss Robertson).

SOBRALIA LYOTH (macrantha × Charlesworthii).—A handsome hybrid, of intermediate character, and having rosy-mauve sepals and petals, and a rose-purple lip, with yellow throat. Exhibited by Messrs. Charlesworth & Co.

PRELIMINARY COMMENDATION.

ODONTOGLOSSUM AGALIA (eximium × Aglaon majesticum).—A large and finely-shaped white flower, with a zone of violet purple blotches on the segments. Exhibited by C. J. Lucas, Esq., Warnham Court, Horsham (gr. Mr. Duncan).

CULTURAL COMMENDATIONS.

BULBOPHYLLUM BALFOURIANUM.—To Mr. F. W. Thurgood, gr. to H. T. Pitt, Esq., for a finely-grown plant, having three spikes and an aggregate of fourteen of its large and striking flowers.

SARCOPODIUM ACUMINATUM.—To Mr. J. Collier, gr. to Sir Jeremiah Colman, Bart., for a fine plant of this handsome Philippine species, bearing five strong spikes.

On June 24th, 25th and 26th, the Society held a special exhibition at Chelsea on behalf of the War Horticultral Relief Fund, raised for the purpose of assisting French, Belgian, Serbian and Roumanian horticulturists whose gardens, nurseries and vineyards have been devastated during the war. The meeting was well supported, and the display of Orchids was comparable with that of the great Spring Show held five weeks previously. Unfortunately the weather was dull and cold, and there was a gale on the previous afternoon, which first tore the ends of the large tent to ribbons, and then brought it to the ground, doing much damage to the plants. The other tents fortunately escaped, and the Orchids were not involved in the disaster. Being a special occasion, the various Committees did not meet, but the R.H.S. Council awarded Gold Medals to each of the five magnificent groups which are briefly summarised below.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), staged a brilliant group of some thirty feet frontage, the centre being largely made up of showy Cattleyas, Læliocattleyas and Odontoglossums, with Miltonias and Odontiodas at the sides, and some good Dendrobiums and Thunias behind. Variety was added by some fine examples of Cœlogyne pandurata and burfordiensis, the handsome Dendrobium illustre, the dark green Lycaste Locusta, Disa Italia, the fringed Nanodes Medusæ, Masdevallia calura, Platyclinis uncata, Physosiphon Loddigesii, the fine Cattleya Isabel Sander Gatton Park var., Odontoglossum crispum Oakfield Sunrise, &c.

Messrs. Armstrong & Brown, Tunbridge Wells, made a fine display, the centre consisting of white Odontoglossum crispum, Cattleya Warscewiczii, Læliocattleya Aphrodite, and others, with many hybrid Odontoglossums, Odontiodas and Miltonias at the ends. We noted good examples of Thunia Brymeriana, Miltonia Phalænopsis with five racemes, a richly coloured Dendrobium Thwaitesiæ, Lycaste Deppei, the brilliant Cochlioda Noetzliana, Anguloa Ruckeri, Odontioda Madeline Orchidhurst var., some charming forms of Cattleya Mendelii, and some promising seedling Odontoglossums, and others, the plants generally being well grown and very effectively arranged.

Messrs. Charlesworth & Co., Haywards Heath, staged a magnificent group, in which brilliant Cattleyas and Læliocattleyas, white and blotched Odontoglossums, richly coloured Odontiodas, and a fine series of Miltonias made an imposing display. An interesting novelty was Odontioda Corona (Miltonia Warscewiczii × Odontoglossum Harryanum), with six large chocolate-brown flowers, the tip of the segments yellow, and the apex of the lip white, and Cattleya Hentschelii (Warscewiczii × Dupreana), with bright rose flowers of excellent shape, and a rich purple-crimson lip with two yellow blotches in the throat. We noted examples of the rare Habenaria rhodochila, Vanda cœrulea, Anguloa Cliftonii, Miltonia Venus, Cœlogyne burfordiensis, Oncidioda Charlesworthii, Wilsonara insignis (Oncidioda Charlesworthii × Odontoglossum illustrissimum), and many others, the group being full of objects of interest and very effectively arranged.

Messrs. Stuart Low & Co., Jarvisbrook, staged a brilliant group, the centre being largely made up of Læliocattleya Aphrodite, Canhamiana, Dominiana, and others, and the ends with a combination of white Phalænopsis amabilis, Renanthera Imschootiana, and Odontiodas. There were also many good Cattleya Mendelii, white and coloured, Cypripedium Watsonianum and other good hybrids, Cochlioda Nœtzliana, Eria pannea, Dendrobium Brymerianum, Brassavola Digbyana, Maxillaria Houtteana, &c., in a very effective group.

Messrs. Mansell & Hatcher, Rawdon, Yorks., staged another excellent

group, containing many brilliant Cattleyas and Læliocattleyas, some well-bloomed Vanda teres, a very fine series of Odontiodas, Miltonias and Odontoglossums, and a charming series of the Cypripedium niveum group. Among interesting things noted were a good example of Cœlogyne pandurata, Anguloa Cliftonii, the violet-blue *Zygopetalum* maxillare, Odontioda Sunbeam and Diana, and others too numerous to mention. The plants were very effectively arranged in undulating banks.

Cut blooms of Orchids from different people were also included in a sale of flowers, fruit, vegetables, &c., on behalf of this very deserving fund.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held at the Coal Exchange, Manchester, on June 5th, the opening meeting of the new Session, the members of the Committee present were: The Rev. J. Crombleholme (in the Chair), Messrs. R. Ashworth, A. Burns, A. Coningsby, D. A. Cowan, J. Cypher, J. Evans, J. Howes, A. Keeling, D. McLeod, J. McNab, Dr. F. T. Paul, W. Shackleton, E. W. Thompson, J. Thrower, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Cattleya Mabel var. Invincible (C. Myra Peeters × Warneri alba); from S. Gratrix, Esq.

AWARDS OF MERIT.

Cattleya Bridesmaid (C. Brenda × intertexta alba); from Mrs. Gratrix.
Cattleya Mossiæ Wageneri West Point Monarch; from S. Gratrix, Esq.
Miltonia Bleuana var. Gold Crest; from Capt. W. Horridge.

CULTURAL CERTIFICATES.

Mr. A. Burns, for Cattleya Dusseldorfii Undine.

Mr. W. Shackleton, for Odontoglossum crispum var Grace.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), staged a group, to which a large Silver Medal was awarded. It contained Cypripediums Goweri Bridge Hall var., Rowena, niveum, callosum Sanderæ and Lawrenceanum, Miltonia vexillaria vars. G. D. Owen, Goliath, Lyoth, and robusta, Læliocattleya Eudora, Lc. Canhamiana alba, Odontoglossums in variety, Odontioda Red Cross, and others.

S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), staged Brassocatlælia King of Denmark, and others which appear in the Award list.

Mrs. Gratrix, Whalley Grange (gr. Mr. Howes), staged Brassocattleya Cliftonii alba.

Capt. Horridge, Bury (gr. Mr. Coningsby), staged Miltonia seedlings of the vexillaria G. D. Owen type, and Odontoglossum nobile.

The Rev. J. Crombleholme, Clayton-le-Moors (gr. Mr. E. Marshall), staged examples of Cypripedium niveum var. Dorothy Clare, and C. Greyi var. claytonensis.

Messrs. Cypher & Sons, Cheltenham, were awarded a Silver Medal for a group, including Cattleya Mendelii, C. Mossiæ Wageneri, and C. Schrœderæ × Venus, Læliocattleya Fascinator and forms of Lc. Aphrodite, Lælia purpurata and var. alba, Brassocattleya Veitchii, Odontoglossum eximium xanthotes and O. excellens, Odontioda oakwoodensis, Cypripedium Rothschildianum, and others.

Messrs. Sanders, St. Albans, staged an interesting exhibit of cut spikes of Cymbidiums (23 in number), principally imported natural hybrids of the insigne type, and a few garden hybrids, including C. Dryad (insigne × Parishii Sanderæ).

Messrs. Keeling & Sons, Bradford, staged Odontoglossum eximium, promerens, Wiganianum, and Jasper splendens, with Cypripedium Goweri splendens.

N.B.—The name of the Odontoglossum King George V., that received a First-class Certificate on April 17th, 1919, when exhibited by A. Hanmer, Esq., has been altered, and will appear on the record as O. Rex Britannicus.

At the meeting held on June 19th, the members of the Committee present were: Rev. J. Crombleholme (in the Chair), Messrs. A. Burns, J. C. Cowan, J. Howes, A. Keeling, J. Lupton, D. McLeod, Dr. F. T. Paul, W. Shackleton, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Cattleya Mossiæ Wageneri Beardwood var.; from Col. Sir J. Rutherford, Bart.

Læliocattleya Pelius (C. Enid × Lc. Dominiana); from S. Gratrix, Esq.

AWARD OF MERIT.

Læliocattleya Aphrodite Bridge Hall var.; from Mrs. Bruce and Miss Wrigley.

CULTURAL CERTIFICATE.

Mr. J. Lupton, for Cattleya Mossiæ Wageneri Beardwood var.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), were awarded a Silver Medal for a group composed principally of Odontoglossums of the crispum section and a few hybrids, Læliocattleya Canhamiana, Lc. Martinetii, a fine plant of Renanthera Imschootiana, and various other good things.

Col. Sir J. Rutherford, Bart., M.P., Blackburn (gr. Mr. J. Lupton), staged a plant of Odontoglossum Fairlight, in addition to those which appear in the List of Awards.

Mr. J. Birchenall, Alderley Edge, staged a plant of Miltonia vexillaria G. D. Owen.

The following prizes will be competed for during the season :—

J. J. Bolton's Gold Medals and Prizes to Gardeners, for Cypripediums.

Royal Botanic Society of Manchester's Gold Medal, for Culture.

A. R. Handley's Prizes to Gardeners, for Culture.

Charlesworth's Objet d'Art and Prize to Gardener, for New Awards.

Cypher's Gold Medal and Prize to Gardener, for arrangement in Groups.

Evans' Gold Medal and Prize to Gardener, for Dendrobiums.

A. Hanmer's Silver Cup, and Prize to Gardener, for highest number of Points.

Hassall's Trophy and Prize to Gardener, for Cattleyas and hybrids.

McBean's Silver Trophy and Prize to Gardener, for Odontoglossums and hybrids.

W. Pickup's Gold Medals and Prizes to Gardener, for Varieties not already provided for.

Sander's Gold Medal and Prize to Gardener, for Cut Orchid Flowers.

P. Smith's Prizes to Gardeners, for most groups exhibited.

The Society's Medals, for Exhibits not in competition for above Prizes.

Vases will be provided for Exhibitors who may stage cut flowers of Orchids, and the Committee makes an earnest appeal to all members to assist in making this class a success.

CYMBIDIUM CHLORANTHUM, Lindl.—A photograph and inflorescence of a Cymbidium, now in the collection of G. Hamilton Smith, Esq., Northside, Leigh Woods, Bristol, has been received from Messrs. Sanders, St. Albans, who imported it from Java some eight years ago. The species has a very confused history. It was described by Lindley in 1843 (*Bot. Reg.*, xxix. Misc. p. 68) as a Nepalese species which had flowered with Messrs. Loddiges, Hackney, and it was afterwards figured (*Bot. Mag.*, t. 4907). In 1854 the same thing was described by Reichenbach under the name of C. variciferum (*Bonplandia*, 1854, p. 91), from a plant which flowered with Messrs. Booth & Sons, at Hamburg, nothing being stated as to its history. In the *Flora of British India*, Sir Joseph Hooker remarked that the species was Australian, on what authority we have not discovered, but it may be regarded as a mistake, for it is identical with C. sanguinolentum, Teijsm. & Binn. (*Tijdschr. Nederl. Ind.*, xxiv. p. 318), which is recorded as a native of Mt. Salak, Java, and which has been since figured (*J. J. Sm. Orch. Jav.*, p. 479, fig. 364). Thus we find that the species has three specific names, and has been recorded from as many different localities. It is somewhat comparable with C. ensifolium in habit, having narrow leaves, and an erect spike of far more numerous flowers, with yellowish green sepals and petals, and a yellow lip spotted with red at the base. Messrs. Sanders now confirm the Javan habitat, and it is interesting to be able to clear up the

origin of the species. We do not remember to have previously seen specimens of the Javan plant, and it was the living inflorescence of this, which we immediately recognised as O. chloranthum, which supplied the clue to their identity.—R.A.R.

HYBRID DISAS.

IT is curious how comparatively rare these beautiful plants have become in gardens, in spite of some continued success in raising them. A few years ago they were a feature of the Kew collection, where D. kewensis, D. Premier, and D. Watsoni originated, but they seem to have disappeared during recent years, together with the pretty little D. tripetaloides, which was one of the original parents. The brilliant D. grandiflora has always been erratic, succeeding in some places in all its native vigour, but refusing to grow in others, and it was hoped that the hybrids would prove more amenable to cultivation, though the hope has not been borne out by events. It is generally believed that it is a case of providing suitable conditions. A cool, moist position seems essential, with plenty of light and air, so that during the spring and summer a deep cold frame would give an ideal position, but during the winter some provision for heating would be necessary. We have seen them grown in an Odontoglossum house during the winter, and transferred to cold frames for the summer, but these conditions do not always lead to success, and it would be interesting to know the real cause of failure.

Messrs. Flory and Black have frequently exhibited well-grown specimens at meetings of the R.H.S., and we believe they attribute much of their success to a compost of beech leaves, which have been stored in a heap for three years, this being surfaced with living sphagnum, but we have seen them do well in an ordinary compost, and we suspect that the other cultural methods employed are of more importance. A charming group of the plants formerly grown at Kew has appeared in our pages (*O.R.*, vi. p. 241), when it was remarked that they were grown in a mixture of rough peat, with a little silver sand, well-rotten manure and sphagnum, liberal supplies of water being given when the plants were growing, and when at rest after flowering they were never allowed to become dry. They begin to grow in the winter, at which time an intermediate temperature was given.

The three species concerned in the parentage of these plants are D. grandiflora, racemosa, and tripetaloides, the former a native of margins of streams and moist cliffs, and the two others of moist grassy places, which affords a clue as to the moisture conditions necessary. We have not seen D. tripetaloides alive for a long time, and there is a variety aurata, Bolus, which it would he interesting to introduce.

THE GENUS HYALOSEMA.

THE striking Bulbophyllum grandiflorum, long regarded as anomalous in the genus, is the original species of a curious little group, to which the sectional name of Hyalosema was given by Schlechter, in allusion to the window-like markings on the dorsal sepal. Several additional species with the same general character have since appeared, and the group is so different in appearance from ordinary Bulbophyllums that we have wished that some distinguishing generic character could be found. On examining an additional species at Kew, before the flower was fully expanded, we noticed that the sepals were not valvate as in other Bulbophyllums, but that the lateral sepals in the bud state are applied to the sides of the dorsal sepal, which latter is conduplicate in its upper part. The essential difference between a valvate and an imbricate arrangement of the sepals has been recognised as of generic value in other groups of orchids, and with the other anomalous characters will serve to separate Hyalosema generically. Hyalosema resembles Bulbophyllum and other allied genera in habit, but has single-flowered scapes, and ample, submembranous sepals, with an imbricate arrangement as above described. In most of the species the petals are remarkably small, and broader than long, so that they appear absent until looked for very closely. The lip is much flattened laterally, with an acute upper margin, and a few basal hairs, at all events in the living species now available. The column wings are very broad and rounded instead of tooth-like.

HYALOSEMA GRANDIFLORUM, Rolfe, which is the type of the genus, is a native of New Guinea, and was originally described and figured by Blume under the name of Bulbophyllum grandiflorum (*Rumphia*, iv. p. 42, t. 195, fig. 3, t. 199, fig. B), from materials collected by Zippel, who in 1828 accompanied an expedition commissioned by the Dutch Government to establish a civil and military settlement in the New Guinea Archipelago. It was introduced to cultivation by Messrs. Linden, from whom a plant was acquired in 1887 by Sir Trevor Lawrence, without record of origin. It flowered in the collection in March, 1895, and received a Botanical Certificate from the R.H.S. under the name of Bulbophyllum burfordiense, but on being sent to Kew was immediately recognised by the writer as the long-lost B. grandiflorum. Later it was figured from a plant that flowered at Kew (*Bot. Mag.*, t. 7787). Even this remarkable species did not escape confusion, for the name was applied by Reichenbach to the following very distinct plant.

H. LONGISEPALUM, Rolfe. Bulbophyllum longisepalum, Rolfe in *Orch. Rev.*, iii., p. 105. B. grandiflorum, Rchb. f. in *Lindenia*, iii. p. 25, t. 108 (not of Blume).—This also was introduced from New Guinea by Messrs. Linden,

there being two plants, one of which passed into the collection of Sir Trevor Lawrence, the other into that of Signor Ludovico Modigliano, of Florence.

H. LEYSENIANUM, Rolfe. Bulbophyllum Leysenianum, Burbidge, in *Journ. Roy. Hort. Soc.*, xvii. p. 55; *Proc.*, pp. 134, 135, fig. 19.—Introduced from Borneo by Burbidge. The Javan B. ornithorhynchum, J.J.Sm. in *Ic. Bogor.*, ii. p. 107, t. 12, is apparently a form of the same species.

H. MICHOLITZII, Rolfe. Bulbophyllum Micholitzii, Rolfe, in *Orch. Rev.*, ix. p. 272.—A species having yellowish-green flowers, with the usual white blotches on the dorsal sepal. It was obtained from Messrs. Sander, and flowered in the Royal Botanic Gardens, Glasnevin, in October, 1896.

H. FRITILLARIOIDES, Rolfe. An additional species which has just flowered at Kew, without any record of origin, and has been described under this name. It is much like H. grandiflorum in colour, with the markings very well developed, but the dorsal sepal more concave, and only about half as long.

Several others are as yet only known from dried specimens. From New Guinea we have, H. elephantinum, H. fritillariflorum, and H. tricanaliferum, described under Bulbophyllum by J. J. Smith; H. biantennatum and H. singulare, under Bulbophyllum by Schlechter; and H. Klossii, under Bulbophyllum by Ridley. From Celebes we have H. Elbertii and H. Minahassæ, the former described under Bulbophyllum by J. J. Smith, and the latter by Schlechter. Lastly from New Ireland we find H. trachyanthum, described under Bulbophyllum by Kränzlin, and from the Solomon Islands, H. Cominsii, described under Bulbophyllum by the present writer. Thus fifteen species are now known, and it is probable that others remain to be discovered.

R. A. ROLFE.

ORCHID NOTES AND NEWS.

THE dates of the Royal Horticultural Society's meetings at the London Scottish Drill Hall for the next two months are August 12th and 26th and September 9th and 23rd. The Orchid Committee will meet at 11.45 a.m. The succeeding meeting is a show of British grown Fruit on October 7th, on which occasion we believe the Orchid Committee will not meet.

The meetings of the Manchester and North of England Orchid Society are suspended during August, but the session re-opens on September 4th, and the succeeding dates are September 18th, and October 2nd and 16th. The meetings are held at the Coal Exchange, Manchester, and are open to members and the public from 1 to 4 p.m. The Committee meets at noon.

The Secretary announces that the Vases to be used for cut Orchid flowers and spikes, where it is not convenient for the plants to be exhibited, are now to hand, and the Committee invites exhibits from members. It should afford an opportunity to show the decorative value of Orchids as cut flowers, and we presume that sprays of fern or suitable foliage may be included.

In an article under the heading "A Malayan Forest," we note the following: "I need hardly say that this is the country for Orchids. They abound in every tree and rock, which, I am sorry to add, they do not in general adorn. Few of them have conspicuous flowers, the general aspect of their fleshy stems forcibly reminds one of half-withered cabbage stumps, Yet, as they will grow anywhere, there is a great taste for hanging them everywhere by amateur gardeners in the Straits Settlements. Thus verandas become places in which you can hardly walk with safety. These plants are perfect ants' nests, with an occasional centipede ready to invade the bedrooms as soon as the rainy season sets in." We fear the experience of the writer has been unfortunate.

Can any reader inform us if the handsome Utricularia Endresii is still in cultivation? The allied U. montana is usually grown in baskets in the Orchid house, a position for which it is eminently suited, though it cannot claim any relationship with the family.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

H D.—The flower is Vanda Densoniana, Bens. and Rchb. f., a native of Burma, and now rather rare in cultivation.

R.L.P.—A very interesting natural hybrid, of which an account is held over. The significance of the remark about the parents is that we believe such plants are rarely found except where the parent species also occur. It is doubtful if the seeds of terrestrial Orchids are carried very far by the wind, or if so that they would then find suitable conditions for germination.

M.J.G.—Quite possibly a natural hybrid, and we are comparing it with the records, which are rather numerous.

E.W.T.—We are a little doubtful about the supposed Sophrolælia Alcides, for one of the pseudobulbs has two leaves, but we will examine it further. Such anomalies do sometimes occur.

Photographs and drawings received with thanks.—E.C.; G.W.: E.D.M. We will attend to the other matter as early as possible.

Several notes are unavoidably held over for a future issue.

In reply to several correspondents who have written about bound volumes and binding cases, we regret being still unable to obtain them. At the end of June a large binding firm wrote that the shortage of labour and materials was such that they were unable to undertake them yet. We will try again, meantime we assure our subscribers that the delay is equally inconvenient to ourselves, and we know of others who are in the same predicament.

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Edited by R. ALLEN ROLFE, A.L.S.

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The Orchid Review

VOL. XXVII. SEPT.-OCT., 1919. NO. 321-322.

OUR NOTE BOOK.

THE establishment of a Society for the promotion of the study of Genetics, as announced on another page, should be welcome, both from the economic and the scientific stand-point. Enormous progress has already been made in the production of economically valuable races of plants and animals by practical breeders, who have looked rather askance at some of the recent developments of experimental research, while on the other hand students of genetics have not always accorded to breeders the full value of their achievements. There has been a want of co-operation and oftentimes a want of sympathy between the two classes of workers, which a fuller interchange of ideas should tend to remove, and the Genetical Society will find a vast field for its energies.

The objects of the two classes of workers are somewhat divergent. The breeder sets out to increase the value and utility of the domesticated races of plants and animals, and accordingly concentrates his attention on those qualities in which improvement is desired. Modern genetic research largely concerns itself with the heredity of characters, quite independent of their utility, because of its supposed bearing upon the theory of Evolution, the central idea being that experiments with existing organisms will elucidate the course of Evolution in the past. This belief is based upon what has come to be termed the "Law of Mendelian heredity," and around this the work of the Genetical Society is likely to focus itself for a long time to come.

How far experiments upon Mendelian lines can be utilised in the improvement of garden plants remains to be proved. Early experimenters in intercrossing and selection were guided solely by utilitarian considerations, but they soon found that the subject was beset with limitations, and the discovery that Nature had herself initiated similar methods led to an attempt to understand better the principles involved, and ultimately to the set of experiments which will ever be associated with the name of Mendel. Although Mendel appreciated the work and "inexhaustible perseverance"

of such "careful observers as Kölreuter, Gärtner, Herbert, Lecoq, Wichura, and others," he expressed his conviction that among all the numerous experiments made, not one had been "carried out to such an extent and in such a way as to make it possible to determine the number of different forms under which the offspring of hybrids appear, or to arrange these forms with certainty according to their separate generations, or definitely to ascertain their statistical relations." This blank he attempted to fill by a set of experiments with garden peas, the results of which were published in a classical paper which appeared in 1866, but which, curiously enough, passed almost unnoticed for a period of over thirty years.

Mendel was a clear thinker. He realised that in hybrid unions both similar and diverse parental characters were brought together, and that so far as the latter were concerned some compromise had to be effected. He emphasised the essential difference between stable and variable hybrids; those in which the differences were entirely and permanently accommodated together, and those in which the arrangement between the conflicting elements was only temporary, and he pointed out the increasing complexity when a greater number of diverse elements were brought together. All this is clear from his remark that "since in the habit of the hybrid plant no changes are perceptible during the whole period of vegetation, we must assume that it is only possible for the differentiating elements to liberate themselves from tbe enforced union when the fertilising cells are developed. In the formation of these cells all existing elements participate in an entirely free and equal arrangement, by which it is only the differentiating ones which mutually separate themselves." Mendel further alluded to Gärtner's successful attempts to transform one species into another by continued hybridisation; all of which suggests that his attention was drawn to the subject by controversies then current as to the stability of species. His results, shorn of all technicalities, were the discovery of incompatibility and segregation of the diverse elements united by intercrossing.

Curiously enough, Mendel's discovery of hybrid segregation was anticipated by over forty years by three Englishmen, working independently with the same subjects, namely, garden peas. On Oct. 15th, 1822, a paper by Mr. John Goss, was read before the Horticultural Society of London, entitled, "Variation in the Colour of Cross Impregnated Peas." In the summer of 1820 Mr. Goss deprived some blossoms of the Prolific Blue pea of their stamens, and the next day applied the pollen of a dwarf pea of the white-seeded group. Three pods were obtained, and when opened, Mr. Goss remarks, "in order to sow the seed, I found, to my great surprise, that the colour of the peas, instead of being a deep blue, like their

female parent, were of a yellowish white, like the male. Towards the end of the summer I was equally surprised to find that these white seeds had produced some pods with all blue, some with all white, and many with both blue and white peas in the same pod. Last spring, I separated all the blue peas from the white, and sowed each colour in separate rows; and I now find that the blue produce only blue, while the white seeds yield some pods with all white, and some with both blue and white peas intermixed." Here then is Mendel's "dominance."

The Secretary added a note, that previous to the receipt of the above communication, one on the same subject was transmitted by Alexander Seton, Esq., and read at the meeting of August 20th. Mr. Seton impregnated the flowers of a well-known green pea, Dwarf Imperial, with the pollen of a white, free-growing variety. One flower produced a pod of four peas, which did not differ in appearance from the others of the female parent. The plants which grew from the four peas seemed to partake of the nature of both plants, being intermediate in stature, but when the pods ripened it was found that "almost every one of them had some peas of the full green colour of the Dwarf Imperial, and others of the whitish colour of that with which it had been impregnated, mixed indiscriminately, and in undefined numbers; they were all completely either of one colour or the other, none of them having an intermediate tint, as Mr. Seton had expected. The representation of one of the pods in plate 9, fig. 1, conveys a very perfect idea of its appearance." The paper appears in *Trans. Hort. Soc. Lond.*, v. pp. 234-237, and here we find Mendel's "dominance" illustrated in colour.

The third experiment was recorded at pp. 377-380 by the well-known horticulturist, Thomas Andrew Knight. Mr. Goss had suggested the influence of the foreign pollen as the cause of change of colour in the seeds, but this Mr. Knight was able to explain from his own earlier experiments. When the pollen of a gray pea was introduced into the prepared blossoms of a white variety, no change in form, colour, or size of the seeds took place; all were externally like those of the white seed parent. But when sown, they uniformly gave plants with coloured leaves and stems, and purple flowers, these being followed by gray peas only. When the seedlings from these were again fertilised with pollen of a white variety, of permanent habit, the seeds produced were again uniformly gray, but many of these afforded plants with perfectly green leaves and white flowers, succeeded by white seed. The cotyledons of all the varieties employed or produced were yellow, consequently peas with white seed-coats retained their ordinary colour, though they contained the plumules and cotyledons of coloured plants. The blue colour recorded in the other experiments was due to the

blue cotyledons showing through the semi-transparent seed-coats. Knight's experiments began in 1787, and were recorded in a paper published in 1799, entitled "Experiments on the fecundation of Vegetables" (*Phil. Trans. R. Soc. Lond.*, xviii. pp. 504-509). These experiments were purely economic, and originated a number of new varieties, besides giving a number of surprising results, which were confirmed by Gärtner, and amplified by Mendel.

Now that the discovery of Mendel's long-overlooked paper has magnified these phenomena into a so-called "Law of Heredity," of all-embracing importance, it is well to view the facts in their true perspective. Experiments with Orchids, as with many other groups of plants, have given different results, except as to incompatibility and segregation, which are common features of hybridisation. Mendel's results may have an element of utility to the breeder, as indicating facts that he may have overlooked, but it gives him no additional control over the factors with which he works. He has to deal with organisms as he finds them, not with selected characters, and when working for some particular quality, Mendelism cannot help him to exclude undesirable qualities which may also be present. As a theory of Evolution it can teach us little, being necessarily limited to the diverse characters that are united in hybridisation. With this limitation, Mendelian analysis may help us in tracing the distribution of such characters, or their recombination, but it can tell us nothing about their antiquity, or about the forces that produced them. The remark of a keen student of Evolution when viewing the results of a series of Mendelian experiments may be paraphrased so as to make it apply to Orchids. It was something like this: "It appears that we may get black or white, blue, silver, gray, fawn, or even chocolate, but it's always an Orchid. Why is that? A concise answer would indicate the limitations of this much overworked theory.

Perhaps the limit was reached when Dr. Lotzy remarked: "Now that Mendelism has been at work for well-nigh fourteen years, it seems to me that the time has come to apply it to Darwinian Evolution . . . as a logical consequence." Examining the reputed causes of Evolution, and rejecting that of the transmission of acquired characters as inadéquate, he expressed his conviction that, "with the possible exception of mutation by the loss of a factor, species are stable," and he asked: "How do species arise? The answer is, I think, by crossing," and he then proceeded to apply the theory to the occurrence of species in nature. Such an extension does not square with the existing distribution of species, but our remarks on this phase of the question must be deferred.

AN OLD ORCHID BOOK.

PROBABLY the earliest book devoted exclusively to the cultivation of Orchids, was the one published in 1843, under the title "Remarks on the management of Orchidaceous Plants, with a Catalogue of those in the collection of J. C. Lyons, Ladiston." It was dedicated to the Council of the Royal Horticultural Society of Ireland, in the hope of exciting an interest in Orchids amongst amateurs, and inducing them to commence their cultivation.

In some introductory remarks the author observes: "The first small collection of Orchidaceæ which I received was from Mexico; at that time I was in total ignorance of the general treatment required by the genus. My gardener potted them in the compost generally used for other stove plants; they all vegetated, and a few of them flowered that summer; there was not any difference made between the epiphytal and the terrestrial species, indeed we did not know that any existed. I was disappointed in their growth, and began to consider that neither the gardener or his employer knew anything about them. I shortly after decided on being for the future my own gardener. I found it necessary to inform myself particularly about Orchidaceæ, their nature, habit of growth, climate and changes of season, which they experience in their native habitats, but alas! unfortunately for me, I had not the benefit of consulting the best authors. No authority then existed, and very little now, on the subject of their cultivation. There has not yet been any work published on the culture of Orchidaceæ. I therefore had recourse to such authorities as threw some light on the nature of the climate, temperature, and general history of the countries from which the plants come. They were the best authorities, as they gave an extensive view of the nature of the different localities; the remainder is only minutiæ, and in many instances common sense."

After some remarks not strictly relevant to the subject, he proceeds: "Amongst the difficulties which I have experienced, and which others may have equally suffered from, is the too frequent practice of Nursery men, selling the same plant under different names, hence arises a great disappointment to the purchaser, and an unnecessary outlay of money. It is probable, however, that blame is not in every instance to be attributed to the vendors. To enable purchasers, and particularly amateur beginners, to avoid in some measure this difficulity, I have given the synonyms of the plants in my own small collection. I have added, where it was practicable, the derivations of the generic and specific names of the plants, with a few observations from experience on the mode of cultivation best suited, in my

humble opinion, to bring them to perfection. A monthly calendar of work to be done has also been added; this will call the attention to those objects which otherwise might escape the recollection. I offer these with the more confidence, having had another year's experience since I printed my catalogue. My plants have increased in health, size, and vigour, and are generally progressing to what may, with truth, be called specimen plants. I have every reason to believe that my plants are correctly named, having had the advantage, through the kindness of Dr. Lindley, of consulting him on every occasion of doubt, and I believe it will be admitted there is no better authority on all matters connected with Botany or Horticulture. He very justly remarks, 'there will be no certainty in the cultivation of Epiphytal Orchidaceæ until we become more precisely acquainted with the habit of the different species than we now are.'"

The author then gave a division of the family for cultural purposes, a large epiphytal class and a much smaller terrestrial one, the former being subdivided as follows:—First, those species found in low dense woods, where scarcely any sun can penetrate. Second, those growing on trees near to open breaks in the woods, where they receive a little sun, plenty of light, and a free but damp atmosphere. Third, those growing on single trees in damp but exposed situations. Fourth, those growing on single trees in elevated situations, where they are subjected to a drier air, and the burning rays of the tropical sun. He then proceeded to describe what he regarded as suitable treatment for the different classes, and his remarks upon the seasons of growth and rest, ventilation and watering, and of the importance of rational treatment are quite in advance of their time.

As regards natural conditions he remarks: "The want of success, particularly with new plants, in our gardens is for the most part occasioned by our ignorance of their natural soil, climate, and station, and thus success is often a mere chance instead of real knowledge. Many gardeners have entertained the erroneous opinion that all tropical plants should be kept in constant vegetation, as it they enjoyed an eternal summer. This is a wrong notion, for there also vegetation is arrested, although only for a short period; some trees lose their foliage, and even evergreens remain in a dormant state. It is therefore necessary that we should in our hothouses create a certain period of rest, that the plants may prepare themselves for new growth, without which they will not produce their flowers.

Three modes, he remarked, had been recommended for the growth of epiphytes. First, in sandy fibrous peat, broken into lumps and mixed with pieces of sand stone or potsherds. Second, suspended from the roof of the house in baskets made of oak, hazel, or elder branches, filled with sphagnum, lumps of peat and potsherds, and in some species pieces of half rotten wood, which should not be of a resinous nature. Third, by fastening them

on large branches of trees covered with moss, which is the most natural of all modes of treating them, in my humble opinion, but as this cannot be effected in every instance, those best adapted for this mode of treatment may be selected.

A fourth method was then recommended, as based on the same principle, but much more suited for the growth of single plants. Concerning this the author remarked, "As this invention is solely my own, and now for the first time made public, I may possibly prejudge its value. I am proud of it, and feel pleasure in communicating it to those interested in this peculiar branch of floriculture. I say with truth, I am not aware of any objection to its general adoption, to the total exclusion of pots, for the growth of epiphytal Orchidaceæ. It appears to me to possess every possible combined requisite for growing them according to their nature, and therefore to the highest state of perfection. This I call The ONISCAMYNTIC Epiphyte Stand."

The invention is described in some detail, and is also illustrated by what is termed "a few rude home-made cuts," though there is no need for the apology. The recipe for the stand is as follows: "Procure from the Potter a pan, generally known as a feeder, with a raised centre, a hole in it, into which the forked branch of a tree is to be made fast. In the forked part, the plant is to be fastened with zinc or copper wire, and the roots covered with moss. The branches can be cut to any desired length, so long as it does not overbalance the bottom. I have them from 12 to 36 inches. The bottom of the feeder should be made thick and heavy, which will cause it to stand steady and firm." Ordinary flower-pots were at first tried, the branches being made firm with clay, but these were soon discarded as unsuitable. The pan was intended to be kept filled with water, to protect the plants from the attacks of woodlice and snails, "which if not got rid of will soon destroy the plants or seriously injure them by eating the ends of the roots." It is this idea of protecting the plants against injury from woodlice that is commemorated in the name. Among other woodcuts given we find an example of a hanging basket, much as used to-day, and another built upon the forked branch mentioned, which latter probably proved rather top-heavy in practice, though we are told that the method was used with success for Dendrobiums. The methods described are of course now improved out of existence, but they are interesting as showing some early attempts at Orchid culture, which were evidently carried out with a considerable amount of success.

After a monthly Calendar of Operations we find a Catalogue of Orchidaceous plants in the collection, including 166 named varieties belonging to 53 genera, with remarks on their cultivation. It is remarked that "there are in the collection 350 others, comprising some duplicates and such as have not yet flowered. For many of these I am indebted to Miss Ball, who

kindly gave me a portion of a collection from Mexico: to Lieut. Walsh, 74th Regt., for large and valuable collections from Demerara and Trinidad, and to Dr. Robertson, of Glasgow, for some choice plants from the West Indies."

It is an interesting little volume, about the size of a large pocket book, which is said to have been "printed in leisure moments," and it is illustrated by the author, who remarks, "I fear that my attempts at wood engraving are very rude." It contains much that must have been extremely useful at the time, and it is remarked that "The information thus collected has two valuable claims, first its portable size, and tho' last, not least, the very, very moderate charge at which it is presented to the reader." The work concludes at page 96 with an alleged portrait of the author, but in the Kew copy we find a later Catalogue of the Orchideous Plants at Ladiston, the date being 1845. The number of genera and species have by this time increased, and the enumeration concludes with a list of some 95 only known by number, and a good many cases with the native country in addition.

VUYLSTEKEARA IGNESCENS.—A very striking hybrid has been raised by Messrs. Charlesworth & Co., Haywards Heath, from Miltonioda Harwoodii (Cochlioda Nœtzliana × Miltonia vexillaria) crossed with the pollen of Odontoglossum Harryanum, of which the first flower has been sent to us. It is most like the Miltonia grandparent in general shape, and at present slightly under three inches across, with a broad, expanded lip, but the colour is very different, and is most comparable with that of the Miltonioda parent. The sepals and petals may be described as rosy crimson, but the prevailing colour of the lip is orange scarlet, owing to a mottling of small yellow dots, these being somewhat larger and paler at the sides, while about the centre occurs a W-shaped yellow marking. The crest consists of four yellow plates, the outer pair being shorter and spiny. The column is Miltonia-like, five lines long, deep yellow in front with brown dots, and paler behind with a purple stain, the narrow, rounded wings being lilac. The column is free from the lip, but with a central ridge at the base which forms a strengthening connection, and there is a slight constriction below the stigma. The Odontoglossum Harryanum markings have diffused, as in the case of Odontioda Charlesworthii. When this hybrid genus was originally described (*O.R.*, xix. p. 60), it was pointed out that the name would apply to all hybrids between the genera Cochlioda, Miltonia and Odontoglossum, and thus would include those from Miltonia × Odontioda, Cochlioda × Odontonia, and Odontoglossum × Miltonioda. The present striking hybrid completes the series, and is very promising, as the Miltonia ancestry should originate a race more suitable for culture in a warmer climate than is Odontoglossum.—R.A.R.

ODONTOGLOSSUM ALICIÆ.

THE annexed figure shows a flower of Odontoglossum Aliciæ, an early hybrid of the violet-purple O. Edwardii, the other parent being O. spectabile (crispum × Harryanum). It was raised by the late firm of Messrs. William Bull & Sons, Chelsea, and flowered for the first time in December, 1906, being the fourth hybrid of O. Edwardii to make its appearance. The others were successively, O. Lairessei (from O. Cervantesii), O. Thompsonianum (from O. crispum), and O. Fletcherianum (from O. cirrhosum). The number now exceeds forty, including crosses with the

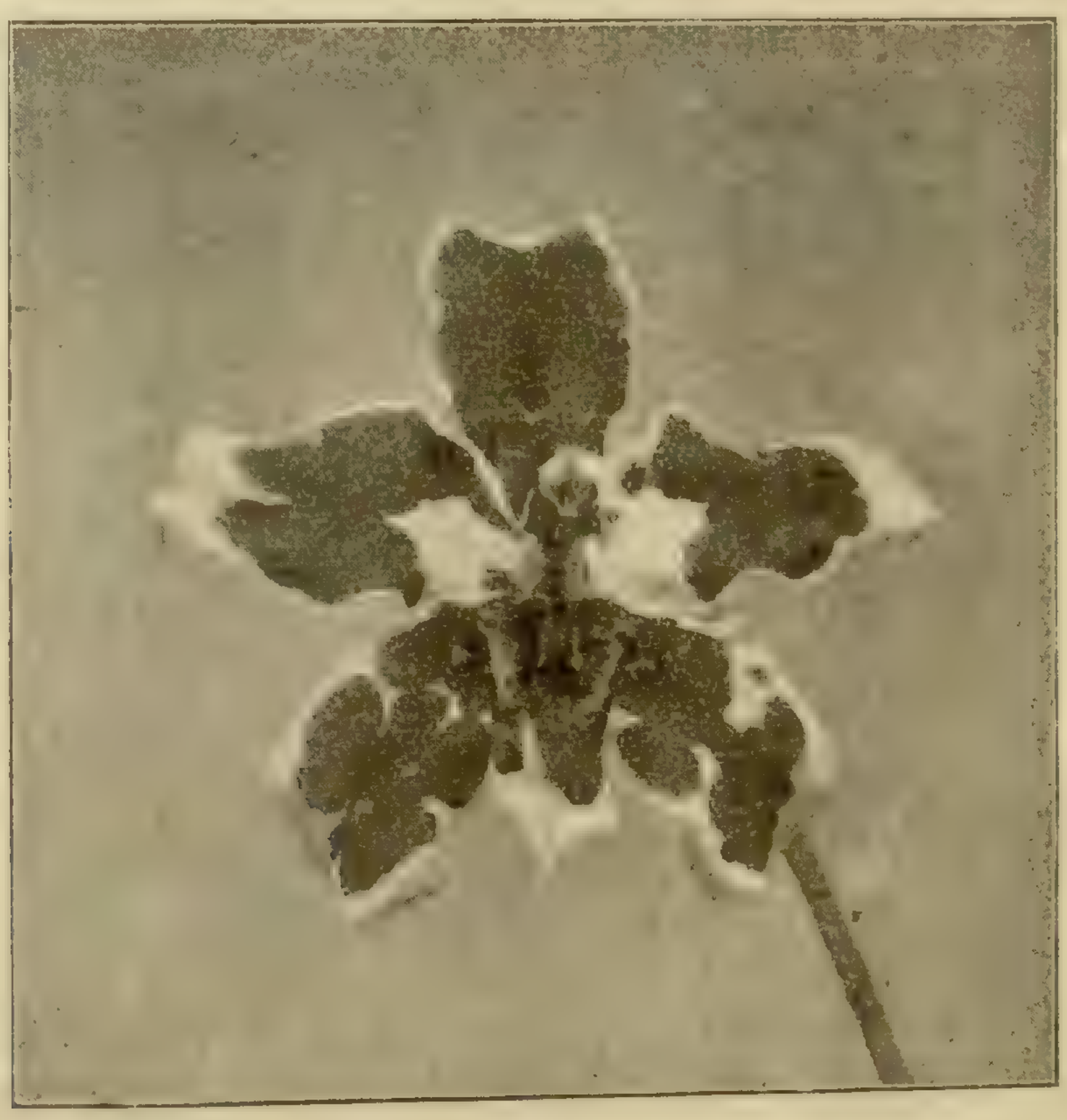

Fig. 10. ODONTOGLOSSUM ALICIÆ.

allied genera, Cochlioda, Miltonia, Ada, and Oncidium, besides which there are several secondary hybrids with Odontioda. It is a remarkable development in so short a period, and is largely explained by the desire to unite the violet-purple colour of O. Edwardii with the larger flowers of the allied species. So far as colour is concerned it has been successful, but the numerous, small flowers, and narrow segments of O. Edwardii have been a great handicap, and there is much room for further work. O. Aliciæ itself might be carried further, for it has a much improved shape, and ample violet-purple blotches. The ground colour is light yellow when the flower opens, gradually changing to ivory white. The plant received an Award of Merit from the R.H.S. in January, 1907.

BRITISH NATURAL HYBRID ORCHIDS.

IN a paper on "Hybrids among British Phanerogams," which appeared in the *Journal of Botany* in 1907, the Rev. E. F. Linton gave an enumeration of the British Hybrid Orchids known to him, these being eleven in number, as follows:—Epipactis atrorubens × latifolia, Orchis incarnata × latifolia, Orchis latifolia × maculata, Orchis latifolia × ericetorum, Orchis maculata × Habenaria conopsea, Orchis ericetorum × Habenaria conopsea, Habenaria albida × conopsea, Ophrys apifera × arachnites, Ophrys apifera × aranifera, Ophrys arachnites × aranifera, and Ophrys aranifera × muscifera. Localities were given in most cases, but not the names of the hybrids, and after some remarks on fertility among cultivated Orchids generally, Mr. Linton observed: "I have no evidence to show that British hybrids are fertile; as a rule they have only been found very sparsely, and the natural inference would be that they do not reproduce themselves." He also remarked that he grew a plant of H. albida × conopsea and flowered it for three years, and noted that it matured no capsule, from which sterility might be inferred, or the absence of the right moth. One other British hybrid appears to have been overlooked, namely, Habenaria bifolia × Orchis maculata, which was recorded at pp. 134, 135 of our fifth volume. Several others have since been recorded, and it may be interesting to give a brief account of them, under their modern names, with notes of localities and other details. We have, however, omitted such of the extra-British references as may be found in the *Index Kewensis*, as otherwise they would have been unduly numerous.

EPIPACTIS SCHMALHOUSENII, Richter (atrorubens × latifolia),—One plant found on limestone near Tongue, W. Sutherland, in 1900, with the parents, by the Rev. E. S. Marshall (*Journ. Bot.*, 1907, p. 298). Originally recorded from Russia, in 1874, by Schmalhousen. According to Focke, it also occurs in Germany where the parents grow together, and we have further evidence to record as to its occurence in Britain under similar circumstances.

OPHRYS BOTTERONII, Chodat (apifera × arachnites).—Downs above Folkestone, where the parents occur together in good quantity (*Hamb. & Marsh. Fl. Kent*, p. 333). Originally observed by G. E. Smith, who in 1829 remarked (*Cat. Pl. S. Kent*, p. 57), "O. arachnites and apifera, by a commixture of pollen, produce a great variety of character." O. Botteronii was described in 1887, from plants found near Bienne, Switzerland.

OPHRYS ASCHERSONII, Nanteuil (arachnites × aranifera).—Downs between Newington and Lyminge, Mr. Lee (*G. E. Smith, l. c.*, p. 57, t. 5,

fig. 2). Smith recorded O. fucifera as the other parent, but it is a case of mistaken identity, for what he describes and figures as O. fucifera is O. aranifera. O. Aschersonii was described in 1887 from plants found in Champagne, France.

OPHRYS EPEIROPHORA, Peter (apifera × aranifera).—Gathered in Magpie Bottom, near Shoreham, Kent, in 1898, by Mr. G. L. Bruce (*Haub. & Marsh. Fl. Kent*, p. 334). This hybrid was originally found in Bavaria, in June, 1882.

OPHRYS HYBRIDA, Pokorny (aranifera × muscifera).—Found on Wye Downs, Kent, in 1905, by Messrs. H. Walker and G. W. Harris. Described and figured in *Orch. Rev.*, xiii. p. 234, fig. 56, with the parents. Also known from Austria and Switzerland. This hybrid was originally described in 1851 but its history can be carried back for over twenty years, for the same plant was figured by G. E. Smith (l.c., pp. 55, 73, t. 4, fig. 13), under the name of O. aranifera, and later as a variety of O. fucifera (*Sm. & Sowerb. Engl. Bot.*, t. 2649, fig. a).

(To be concluded.)

BULBOPHYLLUM SOCIALE, Rolfe.—A plant that has just flowered in the collection of J. A. Ansaldo, Esq., Rosebank, Mumbles, proves to be the rare Bulbophyllum sociale, Rolfe, a species that flowered recently at Kew in a clump of B. Ericssonii, Kränzl., and was figured in the *Botanical Magazine* (t. 8761). In this case also the history is not known, but from the original one having appeared accidentally, as remarked, it is assumed to be a native of the Bencoolen district, on the west coast of Sumatra. The plant has entirely the habit of B. Ericssonii, but the flowers are borne in a short raceme, and are very different in shape, bearing some resemblance to those of B. galbinum, Ridl. They are somewhat darker in colour than in the one figured, being of a more uniform lurid purple tint. The specific name alludes to the circumstances under which the plant was found.—R.A.R.

CHARLESWORTHIARA ALPHA.—A striking hybrid, raised by Messrs. Charlesworth & Co., Haywards Heath, from Miltonioda Ajax (Cochlioda Nœtzliana × Miltonia Schrœderiana) and Oncidioda Cooksoniæ (C. Nœtzliana × Oncidium macranthum). It was exhibited at the R.H.S. meeting held on June 17th last, on the occasion of its flowering for the first time. It thus combines the character of the three genera Cochlioda, Miltonia, and Oncidium. It will be noticed that Cochlioda Nœtzliana comes in through both sides of the ancestry, and it is therefore not surprising to find that the flowers are of a nearly uniform scarlet throughout, with a modified shape. It should develop into a fine thing when the plant becomes strong.—R.A.R.

ORCHICŒLOGLOSSUM MIXTUM.

A RARE British natural hybrid Orchid bloomed on the rockwork at Kew last June, whose history can now be carried further. It was originally found in a field at Longwitton, Northumberland, in July, 1891. by Mr. Cecil H. Spencer Perceval, Longwitton Hall, Morpeth, "in company with Orchis incarnata aud maculata, Habenaria viridis, chlorantha, and bifolia, and Listera ovata." As the plant was not recognised, it was transferred to the wild garden, and the spike was sent to Kew for determination, where its distinctness was at once recognised, and a brief comparison showed it to be intermediate between Habenaria viridis and Orchis maculata. As no previous record could be found, the plant was figured and described under the name of Habenari-orchis viridi-maculata, Rolfe (*Ann. Bot.*, vi. p. 325, t. 18). Mr. Perceval succeeded in preserving and increasing the plant, and early in the present year he forwarded tubers to Kew, two of which have bloomed, giving a welcome opportunity of renewing our acquaintance with it in a living state. Its characters are unchanged, the flowers being quite intermediate in structure, and showing a curious combination of green and lilac in colour. Its history has been given in detail (*O.R.*, i. p. 34). The name originally given was intended to indicate its origin, but the separation of Cœloglossum from Habenaria has rendered a change necessary, as given below.

A very similar plant has now appeared in Ireland. In July last an Orchis was sent for determination to Mr. R. Lloyd Praeger, by the Rev. W. E. Steele, of Enniskillen, and was forwarded on to the writer. In an accompanying letter Mr. Steele remarked: "I found only two heads of it growing here in a field at Levally. It bears some resemblance to Habenaria viridis, which grows plentifully in the next field, but the colour is altogether different. This Orchis when fresh had a lovely colour. The lower blossoms were cream, the middle ones streaked with pink, and the upper ones pink." It may represent the same combination.

Some ten years after the original plant appeared, an Orchis mixta, Domin, was described (*Sitz. Bohm. Ges. Wiss.*, xxii. p. 7), from a single example found on the mountains on the north-east frontier of Bohemia, which was said to combine the characters of Cœloglossum viride and Orchis maculata. This plant afterwards became Orchicœloglossum mixtum, Asch. & Grabn. (*Syn. Mitt. Eur.*, iii. p. 847). It is apparently a very rare hybrid, but this may arise from the parents not very frequently growing together. In any case it is interesting to find the plant in such widely-separated stations.

R. A. ROLFE.

ORCHIDS AT HOME.

ANOTHER interesting glimpse of Orchids amid their native surroundings may be gained by the perusal of that fascinating work, "The Gardens of the Sun," by the late Mr. F. W. Burbidge, in which are recorded experiences of his travels in those "beauty spots of the Eastern Seas," Borneo and the adjacent Islands, where "Nature still reigns supreme."

Nothing, he remarks, can possibly be of more interest to lovers of exotic plants generally than to be able to form some idea of their native homes, so far as description can possibly supply the place of travel. In countries where the mean temperature is thirty or forty degrees higher than in England, the clothing of the earth, so far as represented by vegetation, is of a luxuriance we can scarcely imagine, and the variety caused by the addition of such distinct types as tall palms, bananas, grasses, or bamboos and tree ferns to the more ordinary kinds of tree beauty, and the further clothing of these with epiphytes and parasites of the most singular or beautiful description, makes up a scene of immense interest.

Epiphytal Orchids are essential heat-lovers—like palms, they are children of the sun. One may often travel a long way in the islands where these plants are most abundant without catching a glimpse of them; and this is especially true of Phalænopsis grandiflora, which is of all Orchids perhaps the least obtrusive in its native habits. This trait is, however, the unobtrusiveness of high birth, they do not care to touch the ground, but rather prefer a sphere of their own high up in the trees overhead. The plants have a charming freedom of aspect, as thus seen naturally high up in mid-air, screened from the sun by a leafy canopy, deluged with rains for half the year or more at least, and fanned by the cool sea breezes or monsoons, which doubtless exercise some potent influence on their health—an influence which we can but rarely apply to them artificially, and the greatly modified conditions under which we must perforce cultivate them may not render this one so desirable as it sometimes appears to be abroad.

In the lowland forests near the equator a peculiar phase of vegetation is not unfrequently seen. Trees one hundred feet to two hundred feet in height tower upwards on all sides; and one walks in shade—diffused light is perhaps the more correct expression—the tree trunks being the pillars of Nature's cathedral, and the leafy branches high up above represent the roof. All the vegetation you see around you on earth, rocks or fallen trunks, is represented by a few ferns, lindsayas, with bright steel-blue fronds a yard high, broad leaved aroids, or ginger-worts; but epiphytes of all kinds seem totally absent: and the truth is, that, like lovable "Tom Bowling," of

Dibdin's minstrelsy, they too, have "gone aloft." Above you is a world of light and air and sunshine, which birds, insects, and flowers alike enjoy.

This is in the forest primaeval, but near clearings, or on the skirts of the forest near rivers, which let in the light and air, the Phalænopsis and other epiphytes are less ambitious, and they may then be found in positions but little above the more plebeian terrestrial kinds of vegetation. This is also the case when, as sometimes happens, they are found on the trees which fringe little islands; and then not only do the plants receive a good deal of sunshine as it streams through the leafy twigs of the branches to which they cling, but it is also reflected back again from the glistening sea. The intense light in which they thus exist, added to the fervent heat and the deluge of rain in which it falls during six or seven months of the year, accounts for the enormous leaf and root growth made by these plants in their native habitats. The flowering of the plants is not so extraordinary, indeed rather disappointing, after the results which may be seen in English gardens. It is not so much the paucity of flowers produced, however, as their early destruction caused by the "unbidden guests" the Orchids are made to entertain.

High up overhead the most lovely Orchids hold their court in the sunshine: here they are really "at home" to their winged visitors. Now and then, however, you come across a newly-fallen tree—a very monarch of the woods—which has succumbed to old age and rude weather at last, and has sunk to the earth from which it sprung as a seedling generations ago; its branches laden with everything inanimate, which had made a home in its branches. Some of these ruined trunks are perfect gardens of beauty, wreathed with graceful climbing plants, and gay with flowers and foliage. The fall of a large tree, and its smaller dependants, lets in the sun, and so the epiphytes do not suffer much for a time; and one may thus observe them in all their beauty.

Here, right in the collar of the tree, is a plant of the Grammatophyllum Orchid, big enough to fill a Pickford's van, and just now opening its golden-brown spotted flowers on stout spikes two yards long. There, on that top-most branch, is a mass of the moth Orchid, or Phalænopsis, bearing a hundred snowy flowers at least; and in such healthy vigour is it, that lovers of Orchids at home—supposing it could be flashed direct to "Stevens's" in its present state—would outbid each other for such a glorious prize, until the hammer would fall near on a hundred guineas, as it has done beforefor exceptional specimens of these lovely flowers.

Burbidge, it may be added, made a trip to Borneo and the Sulu Archipelago, in 1877 and 1878, for Messrs. James Veitch & Sons, and among interesting Orchids collected we may mention Phalænopsis Mariæ, Cypripedium Lawrenceanum, and Aërides Burbidgei.

CATTLEYA MENDELII AND ITS DERIVATIVES.

WHEN recently looking at a fine form of Cattleya armainvillierensis, a hybrid from C. Mendelii and C. Warscewiczii, we thought of Gärtner's curious experiment of changing one species into another by hybridisation, and wondered how soon it could be effected in the case of such an Orchid. The form the experiment would naturally take would be to cross C. Warscewiczii with the pollen of C. Mendelii, yielding C. armainvillierensis, re-crossing this with C. Mendelii, and continuing the process with each resulting hybrid until the metamorphosis was complete. The experiment is possible, because we know that such hybrids are fertile, but it would be a long one, for several generations would be necessary, and each of them would take several years to complete. The practical part of such an experiment would be to get a plant having the essential qualities of C. Mendelii, with possibly an improved constitution, and for this the main point is to get C. Mendelii on both sides of the ancestry. In this sense we may be said to have reached the third stage of the experiment, for there are now six secondary hybrids of C. Mendelii that have been re-crossed by itself, and possibly in some of them a third crossing may already have been effected. They are as follows:—

C. Mendelii × Warscewiczii = C. armainvillierensis; recrossed C. Mendelii = C. Baronne Edmond de Rothschild.

C. M. × Lawrenceana = C. Murrayi; recrossed C. M. = C. oakwoodiensis.

C. M. × Lælia cinnabarina = Læliocattleya Lucia; recrossed C. M. = Lc. Czarita.

C. M. × L. purpurata = Lc. Aphrodite; recrossed C. M. = Lc. San Juan.

C. M. × L. tenebrosa = Lc. Acis; recrossed C. M. = Lc. gloriosa.

C. M. × Brassavola Digbyana = Brassocattleya Maronii; recrossed C. M. = Brassocattleya Aida.

The six secondary hybrids mentioned in the right-hand column are thus presumably already three-fourths C. Mendelii, and any further progress in the same direction conld be effected by continuing the process until the desired result was obtained, or until the reversion was complete.

A similar analysis of the hybrids of Cattleya Dowiana was made three years ago (*O.R.*, xxiv. pp. 213-216), and showed no fewer than twenty hybrids, involving four genera, in which the same stage had been reached, the object being to restore the beautiful yellow colour of that species, and here very little progress has been made owing to the dominance of the

purple introduced by the first cross, the few exceptions being those in which yellow was originally present on both sides of the ancestry.

In ordinary practice crossing is seldom carried out on such restricted lines, because certain desired results can be obtained by substituting some other labiate Cattleya for C. Mendelii. It must be remembered that all of them are very closely allied, aud in no case are there unknown factors to upset calculations. For shape and delicate colouring C. Mendelii leaves little to be desired, but for richness of colouring one would prefer to use C. Dowiana, in spite of its tendency to shortness of petal and want of full expansion. Again, one's choice is often limited to plants that happen to be in bloom at any particular time, and one has to use the best then available, a fact which tells in favour of the large collection.

It is only when working for some special result that experiments have to be carried out on such restricted lines, as for example, if one is trying to find out what occurs in nature. We should much like to see a few such experiments carried out, and it need not be entirely on uneconomic lines, even from a purely practical standpoint. One might substitute C. Dowiana for C. Mendelii in the above experiment. This would give C. Hardyana, but does anyone know the natural limits of this fine natural hybrid? Many years ago we expressed the opinion that the so-called C. Warscewiczii Countess of Derby was a form of C. Hardyana, and since then a similar remark has been made about the variety Frau Melanie Beyrodt, but this only means that they are derived from the same two species. The question should be followed up by raisers.

DISAS IN LEAF-MOULD.—With respect to the question of growing Disas in leaf-mould (see p. 129), Mr. H. J. Elwes, Colesbourne, who was formerly very successful in growing these beautiful Orchids in an ordinary compost, remarks that his experience with leaf-mould has not been favourable, and he thinks that success depends chiefly upon the cultural skill of the grower. The points he considers as of special importance are as follows: The admission of plenty of fresh air and light, without exposure to strong sunshine or cold draughts; constant watchfulness against thrips, as the plants will not bear fumigation; careful watering and frequent syringing between the pots during growth, so that the roots are neither dry nor waterlogged; about three months of partial rest after flowering; repotting every two years, either in autumn or early spring; and a temperature not falling below about 35° in winter, and not rising above about 75° in summer, with top and side ventilation all the year round whenever the outside conditions permit. We have a very vivid recollection of the way they flowered at Kew a few years ago, and greatly regret the recent decline in their popularity, presumably owing to difficulties experienced in their culture.

DIMORPHORCHIS LOWII.

THE systematic position of the remarkable Orchid now grown under the name of Arachnanthe Lowii has been the subject of much uncertainty. The plant was originally described by Lindley, in 1847, under the name of Vanda Lowii, and some eight years later became Renanthera Lowii, Rchb. f., though it was not well placed in either genus. In 1881, it was transferred to Arachnanthe, but Messrs. Veitch, in their *Manual*, remark, "It possesses characters so distinct from every known Orchid that it may well be doubted whether its relegation to Arachnanthe by Bentham is destined to be final." In 1882, when Arachnanthe was reduced to the earlier Arachnis, the plant became Arachnis Lowii, Rchb. f., and in 1911 another transfer made it Vandopsis Lowii, Schlechter. We have several times had the opportunity of examining it alive, and have been impressed with its unique character,

Fig. 11. DIMORPHORCHIS LOWII.

and we take the present opportunity of separating it generically, under the name of Dimorphorchis, which expresses its remarkable habit of producing flowers of two separate kinds, as shown in the annexed photograph. These flowers are from a plant in the collection of Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury (gr. Mr. A. Burns), which received both a First-class and a Cultural Certificate from the Manchester Orchid Society on July 17th last. The photograph was kindly sent by Miss Wrigley, who remarks that the plant was purchased by her father in 1911, and has now flowered for the first time. Mr. Burns, who has served in the army for two years, returned from Mesopotamia just in time to see the flower spike begin to push. The flower on the right is one of the orange-yellow kind from the base of the pendulous spike, the other is one of the numerous red and green ones which

form the rest of the inflorescence. The species is a native of Borneo, where it was discovered by Sir Hugh Low, probably in 1845, for early in the following year he sent specimens to Lindley, and remarked: "As I saw it, nothing could have exceeded it in beauty; about 200 of its branches were hanging horizontally from the main stem of a large tree, from each of which depended two, three, or four chains of flowers, each 10 feet in length and sometimes 12 feet. . . . It delights in high trees on the banks of rivers, thick forests, and other humid places" (*Gard. Chron.*, 1847, p. 239). The existence of two different kinds of flowers appears to have been overlooked, as also it may have been by Wallace. who afterwards met with the species. The latter remarked: "Vanda Lowii is particularly abundant near some hot springs at the foot of the Peninjauh Mountain. It grows on the lower branches of trees, and its strange pendant flower-spikes often hang down so as to almost to reach the ground." The habit is well shown in a figure (*Wallace, Malay Archip.*, i. p. 128). Curtis also collected the plant in the low, swampy forest near the coast of Sarawak, where it is said to be abundant, and in the rainy season many of the trees on which it grows are only accessible by means of a canoe. It is always found in the neighbourhood of water, generally on the higher branches of the loftiest trees, and overhanging the smaller streams, sometimes in company with Cypripedium Lowii.

The plant has many times been imported, and succeeds well in a warm house, though from its size and peculiar habit it is not always easy to find a suitable position, and the long, whipcord-like racemes have to be tied up to prevent them from trailing on the ground. A well-grown plant with a dozen to twenty racemes presents a striking appearance. The really remarkable character of the plant is the constant production of two kinds of flowers on the same raceme, the difference extending to both colour and shape, the latter being well shown overleaf. At the base of the inflorescence are two or three flowers like the one figured on the right, the colour being deep orange, with a few very small brown dots (these not well shown in the photograph), while the remaining twenty or more have a narrower, undulate shape, and large chocolate-brown blotches on a light yellow ground. The cause of this difference is still a mystery. It is not sexuality, for the organs are equally perfect in both, and M. Kramer. gardener to Madame Jenisch, Hamburg, has stated that "the basilar flowers fertilised by themselves, the others by themselves, the basilar by the others, and the others by the basilar, all gave ripe fruits." Mr. Spyers, gardener to Sir Trevor Lawrence, however, has recorded that the basal flowers emit a very powerful odour, while none of the chocolate and white are anything but slightly scented. There remains a mystery yet to be solved, and it may be in some way connected with the fertilising insect.

R. A. ROLFE.

SOCIETIES.

ROYAL HORTICULTURAL.

A MEETING of the Society was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on July 1st, a week after the Chelsea meeting on behalf of the War Relief Fund, and produced a rather small display of choice Orchids, only one medal being awarded in addition to the three certificates mentioned below.

Orchid committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Arthur Dye, W. Bolton, C. J. Lucas, S. W. Flory, Pantia Ralli, F. K. Sander, Sir Harry J. Veitch, C. H. Curtis, and R. A. Rolfe.

FIRST-CLASS CERTIFICATE.

DISA BLACKII GRANDIFLORA (grandiflora × Luna).—A very large and handsome variety, bearing an inflorescence of six flowers, with deep rose-coloured lateral sepals, and the galea blush white, more or less marked and spotted with rosy crimson. Exhibited by Messrs. Flory & Black.

AWARD OF MERIT.

THUNIA GATTONENSIS (Bensoniæ Winniana × Majoriana).—A handsome thing, bearing drooping sprays of light rosy-lilac flowers, and the fringed lip light rosy purple in front, with prominent yellow papillæ on the disc. Exhibited by Sir Jeremiah Colman, Bart.

CULTURAL COMMENDATION.

AËRIDES ODORATUM ALBUM.—To Mr. J. Collier, gardener to Sir Jeremiah Colman, Bart., for a well-grown plant bearing a long spike of its pure white flowers.

GENERAL EXHIBITS.

Dr. Miguel Lacroze, Roehampton (gr. Miss Robertson), sent Lælio-cattleya luminosa Bryndir var., with richly-coloured flowers, and Odonto-glossum La Paz, an interesting plant of the Black Prince type.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), sent good examples of Cypripedium St. Alban (Harrisianum × Antigone), and two finely-grown specimens of the graceful Dendrochilum filiforme, with an aggregate of 89 spikes, and several thousand flowers.

Messrs. Sanders, St. Albans, were awarded a Silver Banksian Medal for an interesting little group, including two beautiful examples of Miltonia Sanderæ, Dendrobium Thwaitesiæ Veitch's var., Odontoglossum chryseum (Pescatorei × eximillus), O. Triumph (triumphans × eximium), a fine and richly-coloured hybrid, a very beautiful variety of O. Fascinator, and several other good Odontoglossums and Odontiodas.

Messrs. Charlesworth & Co., Haywards Heath, sent Odontoglossum crispum Lady Newnes, a beautiful variety of the xanthotes type, bearing three fine spikes, a fine example of Læliocattleya Momus, and a well-grown Cypripedium Rothschildianum.

Messrs. Flory & Black, Slough, staged a charming little group of seven hybrid Disas, with rose-purple flowers.

At the meeting held on July 15th, Orchids were rather more numerous and the awards consisted of two Awards of Merit, and two Medals.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Sir Harry J. Veitch, William Bolton, Arthur Dye, F. J. Hanbury, R. Brooman White, W. J. Kaye, J. Charlesworth, S. W. Flory, Pantia Ralli, F. K. Sander, J. R. Wilson Potter, R. G. Thwaites, and G. Wilson.

AWARDS OF MERIT.

ODONTIODA LYRA ROSSLYN VAR. (Odm. Jasper × Oda. Royal Gem).—A large and striking variety, having deep claret-red sepals and petals, with paler markings at the tips, and the lip rose-coloured in front, and claret-red round the deep yellow crest. Exhibited by H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. F. W. Thurgood).

ODONTOGLOSSUM ANTINOUS (Othello × excellens).—A finely shaped flower, with broad, pale yellow sepals and petals, copiously dotted with purple on the basilar two-thirds, and the broad lip white in front, with numerous rose-purple spots round the crest. Exhibited by Messrs. Charlesworth & Co.

GENERAL EXHIBITS.

Sir. Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), showed a fine spike of Aërides odoratum album, a plant of the rare Dendrobium chrysocrepis, with yellow flowers and a saccate lip, and Denrobium Gatton Sunray (illustre × Dalhousieanum luteum), a handsome hybrid raised in the collection, most resembling the latter parent, and having light yellow flowers, with a pair of claret-purple blotches on the lip, connected by a striated band of the same colour.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora Medal for a very fine group of Odontoglossums and Odontiodas, with some hybrid Thunias, examples of Læliocattleya Britannia, the white Cattleya Hesta, and numerous other good things.

A third meeting was held on July 29th, when the Orchid exhibits were few in number, and the awards consisted of one Medal and one Award of Merit.

Orchid Committee present: Sir Harry J. Veitch (in the Chair), J. O'Brien (hon. sec.), Arthur Dye, W. Bolton, F. J. Hanbury, Walter Cobb,

C. H. Curtis, J. Charlesworth, W. J. Kaye, Pantia Ralli, J. Wilson Potter, R. A. Rolfe, and Stuart H. Low.

AWARD OF MERIT.

CATTLEYA ILLUSTRIS (Acis × Maronii).—A beautiful variety, with well-shaped and fragrant flowers, the sepals and petals buttercup yellow, and the lip approaching C. bicolor in shape. The ground colour is yellow, with confluent crimson lines on the broad front lobe, and small auriculate side lobes, which clasp the white column at the base. Exhibited by Messrs. Stuart Low & Co.

GENERAL EXHIBITS.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), showed a well-grown Odontoglossum Gatton Emperor, two profusely-bloomed examples of Promenæa xanthina, the rare Zygopetalum Roeblingianum, and Læliocattleya Ivernia Gatton Park var. (Lc. callistoglossa × L. tenebrosa), bearing a spike of three richly coloured flowers.

Messrs. Stuart Low & Co., Jarvisbrook, staged a brilliant group, to which a Silver Flora Medal was awarded. It contained some finely-grown Cattleya Warscewiczii, C. Hardyana, C. Carmen, and a good C. F. W. Wigan, Oncidium oblongatum, Cochlioda Nœtzliana with five racemes, Dendrobium Thwaitesiæ Veitch's var., the rare Aërides crassifolium, Odontioda Bridesmaid (Oda. Coronation × Odm. Pescatorei), most like the latter in shape, and marked with claret purple on a blush-white ground, examples of O. Madeline and Joan, Eria acervata, Cypripedium Rothschildianum and Stonei, and a few other good things.

At the meeting held on August 12th the exhibits were very few in number, and a single medal, for a fine group of Cattleyas, monopolised the award list.

Orchid Committee present: Sir Harry J. Veitch (in the Chair), J. O'Brien (hon. sec.), Arthur Dye, W. Bolton, F. J. Hanbury, C. H. Curtis, J. Charlesworth, Pantia Ralli, F. K. Sander, and R. A. Rolfe.

Messrs. Hassall & Co., Southgate, received a Silver Flora Medal for a beautiful group of Cattleyas and allies, including several finely grown C. Hardyana alba, C. Sibyl, of both the entire and bicolor-lipped types, C. Naidia exquisita, C. Muelleri alba, C. Judah (Rothschildiana × Hardyana), C. Regina, C. Adula with a spike of six flowers, Læliocattleya Muriel (C. Kienastiana × Lc. callistoglossa), with light rosy mauve sepals and petals, and a large, undulate, purple lip, with yellow lines on the disc, the orange-coloured Lc. Golden Oriole, Brassocattleya Maronii, two distinct and charming forms of Sophrocattleya Faboris, Cypripedium Rossetti, and a few other good things, the whole forming a very effective group.

Messrs. Stuart Low & Co., Jarvisbrook, showed Odontioda Black Prince

(Oda. Queen Alexandra × Oda. Charlesworthii), bearing six well-shaped flowers of remarkably dark colour, the sepals and petals being purple-chocolate, and the broad lip spotted with rose on a whitish ground in front, and a purple zone surrounding the yellow crest.

At the meeting held on August 26th there was a good display of Orchids, nine collections being represented, and the awards consisted of two medals, two Awards of Merit, and one Cultural Commendation.

Orchid Committee present: Sir Harry J. Veitch (in the Chair), J. O'Brien (hon. sec.), W. Bolton, G. Wilson, S. W. Flory, R. A. Rolfe, F. K. Sander, R. G. Thwaites, A. McBean, C. H. Curtis, Walter Cobb, and W. J. Kaye.

AWARDS OF MERIT.

CATTLEYA HARDYANA ALBA PITT'S VAR. (Dowiana aurea × Warscewiczii alba).—A very beautiful variety, with pure white sepals and petals and a deep crimson-purple lip with deep yellow veining on the disc, and some clear yellow on the sides. Exhibited by H. T. Pitt, Esq.

CYPRIPEDIUM ROSSLYN (Godefroyæ leucochilum × Rolfei).—A charming hybrid, with much of the general character of C. bellatulum, the petals and dorsal sepal being very broad, and the colour light cream yellow with lines of claret-purple dots. Exhibited by H. T. Pitt, Esq.

CULTURAL COMMENDATION.

LÆLIA MONOPHYLLA.—To Mr. F. W. Thurgood, gr. to H. T. Pitt, Esq., for a finely-grown plant bearing sixteen orange-scarlet flowers. The plant had been grown suspended from the roof of a Cool house, and made an effective little picture.

GENERAL EXHIBITS.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. F. W. Thurgood), received a Silver Flora Medal for a very interesting group, containing three good examples of Cattleya Hardyana alba, the rare C. Hardyana Countess of Derby, Angræcum Scottianum, Cycnoches stellatum with a graceful raceme of light green male flowers, Promenæa xanthina, Chondrorhyncha Chestertonii, Odontoglossum promerens Princess Mary, Catasetum fimbriatum, well-bloomed examples of Dendrochilum filiforme, Masdevallia Chimæra and Veitchiana, the graceful Brassia longissima, and several interesting Cypripediums.

J. Ansaldo, Esq., Rosebank, Mumbles, sent a number of interesting cut flowers, including a very fine Cattleya Hardyana, C. Sybil Rosebank var., C. Mrs. J. Ansaldo, Sophrocattleya Faboris, and a few others.

Mrs. Bischoffsheim, Warren House, Stanmore (gr. Mr. H. Haddon), sent Læliocattleya rubens Warren House var., a very large blush-white flower, with the front lobe of the lip purple-crimson.

A. J. Hollington, Esq., Forty Hill, Enfield (gr. Mr. Mays), sent a good form of Cattleya Hardyana and another Cattleya hybrid.

Pantia Ralli, Esq., Ashstead Park (gr. Mr. Farnes), sent Cattleya illustris ashteadensis, a pretty yellow variety flushed with rose on the petals, and the front of the lip carmine.

R. Windsor Rickards, Esq., Usk Priory, Monmouthshire, sent a three-flowered inflorescence of Cattleya Mrs. J. Ansaldo Usk Priory var. (C. Adula × Warscewiczii Frau Melanie Beyrodt), having cream-white sepals and petals, and a deep purple lip, the latter most resembling C. Adula in shape. Another hybrid Cattleya had white sepals and petals and some purple markings on the lip.

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver Flora Medal for a fine group of showy things, including well-bloomed examples of Cattleya Warscewiczii and C. Dowiana aurea, the graceful Dendrochilum filiforme, Oncidium incurvum and O. flexuosum, Brassavola Digbyana, Brassocattleya Pluto, Lælia xanthina, Odontioda Devosiana, Odontoglossum grande, Sophrolælia Gratrixiæ, Sophrocatlælia Medeia, and other good things.

Messrs. Flory & Black, Slough, staged a small group of choice things, including Sophrocatlælia William Pitt (Scl. Dorila × C. Hardyana), with large purple-mauve sepals and petals and a deep purple lip, a brilliant example of Læliocattleya Soulange (Lc. Lustre × C. Dowiana), with very richly-coloured flowers, Cattleya Hardyana alba, C. Prince John, C. Mrs. J. Ansaldo, and others.

Messrs. Sanders, St. Albans, sent Cattleya Prince John var. Brilliant (Dowiana aurea × Hardyana alba), most like the latter, and having clear white sepals and petals, and a rich purple lip with yellow blotches at the sides, also Læliocattleya Brightness (C. fulvescens × Lc. Martinetii), with bronzy yellow sepals and petals, and an undulate purple lip.

June 17th.—By some inexplicable oversight, part of the report of this meeting was omitted from our last issue. The following note should follow the matter given at page 124.

GENERAL EXHIBITS.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), showed three fine specimens of Dendrobium Dalhousieanum luteum, D. illustre Florence Bartels, and the handsome violet Odontoglossum Gatton Emperor.

Otto Beit, Esq., Tewin Water, Welwyn, Herts (gr. Mr. H. Lloyd), sent Vuylstekeara Thera var. Tewin (Miltonia Warscewiczii × Odontioda Cooksoniæ), bearing a branched spike of dark red flowers, with blush white front to the lip.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora

Medal for a choice group, including Odontioda Hilda (Odm. Dora × Oda. Royal Gem), with richly coloured flowers, and a number of promising Odontoglossum seedlings. Specially noteworthy was the new Charlesworthiara Alpha (Miltonioda Ajax × Oncidioda Cooksoniæ), with flowers of uniform scarlet colour, a plant which was recommended to the Scientific Committee for a Certificate of Appreciation.

Messrs. Sanders, St. Albans, received a Silver Banksian Medal for an interesting group, good plants of Odontioda Thwaitesii and O. Diana, the fine O. Bradshawiæ Cookson's var., a beautiful example of Læliocattleya Isabel Sander, having white sepals and petals somewhat veined with purple and a dark purple lip, with several other good things.

Messrs. Flory & Black, Slough, sent a few interesting hybrids, including Brassocattleya grandis (Bc. Thorntonii × C. Mendelii), a fine hybrid, having blush white flowers of good shape, with a few purple markings in front of the light yellow disc of the lip, Sophrocatlælia Nerissa.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held at the Coal Exchange, Manchester, on July 3rd the members of Committee present were: Dr. F. T. Paul (in the Chair), Messrs. A. Burns, D. A. Cowan, J. C. Cowan, Dr. Craven Moore, S. Davenport, J. Evans, J. Howes, A. Keeling, D. McLeod, W. Pickup, W. Shackleton, E. W. Thompson, J. Thrower, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Læliocattleya Canhamiana alba The Premier, Cattleya Mabel var. Peace, and Odontoglossum amabile splendens, from S. Gratrix, Esq.

Cattleya Dupreana Heathfield var., from J. J. Bolton, Esq.

Miltonia Charlesworthii var. Peerless, from P. Smith, Esq.

AWARDS OF MERIT.

Cypripedium niveum var. Colossus, from Mrs. S. Gratrix.

Cypripedium bellatulum var. Beryl, from Dr. F. T. Paul.

Odontoglossum crispum var. She, from P. Smith, Esq.

CULTURAL CERTIFICATES.

Dr. F. T. Paul, for Cypripedium bellatulum.

Mr. A. Burns, for Anguloa Cliftonii.

Mr. E. W. Thompson, for Odontoglossum crispum var. She.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), staged a good group, to which a Silver Medal was awarded. It contained Miltonia vexillaria var. Rev. W. Wilks, Vanda cœrulea, Renanthera Imschootiana, Epidendrum prismatocarpum, Phalænopsis amabilis, Oncidium Wentworthianum, Cypripedium Rothschildianum, Odontoglossum Pescatorei Ward's var., and others.

Dr. F. T. Paul, Caldy, Cheshire, staged a few good Cypripediums, and

other interesting things came from, S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes); P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson); and J. J. Bolton, Esq., Pendleton (gr. Mr. S. Lyne), which are included in the above list of awards.

Messrs. Keeling and Sons, Bradford, staged Odontioda Canopus, O. Dainty, Odontoglossum Lambeauianum var. Doris, Cypripedium barbato-Goweri, and Miltonia vexillaria.

At the meeting held on July 17th, the members of Committee present were :—Rev. J. Crombleholme (in the chair), Messrs. R. Ashworth, A. Burns, J. C. Cowan, A. Keeling, E. W. Thompson, and H. Arthur (Secretary).

FIRST-CLASS CERTIFICATES.

Arachnanthe Lowii, from Mrs. Bruce and Miss Wrigley.

Cattleya Judah var. magnifica (C. Rothschildiana × Hardyana), from P. Smith, Esq.

AWARD OF MERIT.

Cattleya Caduceus (C. granulosa × Gaskelliana), from Messrs. Keeling and Sons.

CULTURAL CERTIFICATES.

Mr. A. Burns, for Arachnanthe Lowii, Phalænopsis amabilis Rimestadiana, and Cœlogyne pandurata.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), staged some splendidly-grown specimen plants, including Brassia Lawrenceana, and others, in addition to those mentioned in the list of awards.

P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson), staged Sophrolælia Alcides, and a fine Cattleya mentioned in the list of awards.

Messrs Keeling and Son, Bradford, staged Odontoglossum crispo-Harryanum var. brugense, O. Jasper, O. eximium, Odontioda Edith Hodgson, Miltonia vexillaria Fairy Queen, and Masdevallia calura.

The Vases to be used for Cut Orchid flowers and spikes, where it is not convenient for plants to be exhibited, are now to hand, and the Committee invites exhibits from members.

CATASETUM NASO.—This rare Catasetum, which was figured in the *Botanical Magazine* in 1854 (t. 4792), is again producing a male raceme at Kew, which reminds us that the original drawing includes a figure of a female flower that was omitted from the published plate, possibly from a doubt as to its identity. At all events this flower was wrongly labelled by Lindley "Monachanthus viridis." It may be added that the Kew plant produced female flowers in September, 1902, and again two years later.—R.A.R.

CALENDAR OF OPERATIONS FOR SEPT.-OCTOBER.

By J. T. BARKER, Orchid grower to His Grace the Duke of Marlborough, Blenheim Palace, Woodstock, Oxon.

AUTUMN is a period when we experience very changeable conditions as regards the weather, bright sunshine often alternating with spells of cold and wet, so that it is impossible to prescribe any exact course of treatment. The greatest point to observe at this season is to maintain a proper balance of temperature, neither too hot nor too cold, with sufficient atmospheric moisture to prevent a stuffy feeling in any of the houses. Localities differ as regards humidity, and even the position and structure of the houses must be taken into consideration, as these affect the general results. Sunshine should be allowed to reach all plants which require well maturing before producing their flowers. At one time it was considered good policy to withold water to such an extent that the plants were often shrivelled, but this is neither conducive to good growth nor satisfactory flowering. Ripening and consolidation of the growths is not done by starvation, but by a proper balance of heat, water, light and air, to all the plants, according to their different requirements. This can be done without causing any great fluctuations in temperature, and the effect of either extreme is injurious and should be avoided.

SHADING.—Canvas blinds can now be safely dispensed with. A fine day should be chosen for their removal, as they should be thoroughly dry before being stored away for the winter months in some dry place. Where lath blinds are used they may remain, as their use is a great help at night during severe weather in helping to maintain an even temperature without the use of excessive fire heat. They must be raised during the day time. At this season it is better to discontinue the use of blinds, and give sufficient ventilation to prevent the sun scorching the foliage. This treatment consolidates, hardens, and matures the pseudobulbs and growths, which enables them to pass through the winter without injury. Plants treated in this manner start with much more vigour into growth in the spring, produce finer growths, and with the stronger growth proportionally finer flowers.

VENTILATION.—Air being one of the greatest aids in maintaining a sweet and healthy atmosphere in the different houses, it should be admitted in all departments on every favourable opportunity. Air in conjunction with light is the great factor in the consolidation of growth so desirable to the plants at this season, so that they may pass through the vissitude of the winter without harm. Cold winds and direct currents of air on the plants must be strictly guarded against. A drier atmosphere in general must also be maintained, in order to check the development of spot, which practically all Orchids are subject to if grown under unsuitable conditions. Ill-ripened

Orchids are more subject to the ravages of spot disease than those grown under the conditions here prescribed. Many collections throughout the couutry are suffering from this disease, owing to fuel restrictions in the past, and every means at hand should be taken to eradicate it.

TEMPERATURES should now be gradually reduced a few degrees, so that in November we may reach the lowest or winter temperatures in each department.

WATERING.—At this season few plants take up as much water as when in full growth, and evaporation is much less than during warm weather, hence the necessity of paying attention to the requirements of each plant in giving or witholding water. The operator must be guided by the state of each plant; whether in active growth, or at rest, and whether approaching the flowering stage or not. It is safe at this season to allow plants to dry out before giving more water, care being taken that none suffer for want of it. Speaking generally, it can safely be said, that during the winter months Orchids usually receive too much water at the roots, and too little during the summer.

CLEANLINESS is one of the greatest aids to good cultivation, and both houses, and plants should be kept scrupulously clean. During the winter months a thorough overhauling is beneficial, as during the busy potting season time is so pressing that this work is apt to be neglected. Even in the most favoured districts there is always an accumulation of dirt and other matter on the roofs, obstructing the light, or if on the leaves, preventing them from breathing freely. This operation also gives one the opportunity of re-arranging the plants in such a manner that each receives the maximum amount of light, and any that are not making satisfactory progress can receive special attention. Those that are making secondary growth should be placed at the warmest end of the house, so that it may be finished as soon as possible. Some growers object to this, but I am sure no harm accrues, and it often helps the plants to make an additional lead, even if the autumnal growth is small. The Cattleya family is more addicted to this habit than any other.

FLOWERING PLANTS.—Plants that are coming into bloom should have every attention, by being placed in the lightest position possible; their spikes should also be neatly staked up, and every inducement given to the flowers to open satisfactorily. To realise the value of light on the cultivation of Orchids, it is only necessary to observe the difference in colour between flowers opened in light and in shady positions.

CALANTHES of the vestita section will soon finish their growth, and begin to push up their flower spikes. A light position should be selected for them, and the temperature kept as near as possible to 65°; still they should not be unduly hurried, as the flowers are most valuable at the Christmas season.

Keep the atmosphere rather dry when the first blooms open, and all damping between the pots should cease. Calanthes are excellent subjects from the decorative standpoint, and remain in full beauty for a considerable time when cut.

VANDAS.—At the present day these handsome plants are not generally cultivated, but to those who do grow and appreciate them, the following note may be useful. The end of October, or the beginning of November, is the best time of the year to overhaul Vandas of the V. tricolor and suavis section. The plants now commence to root freely, and continue to do so throughout the winter months, so that the foliage will suffer less than if the work is left over until the spring. If the plants are well furnished with leaves, it is not advisable to disturb them by repotting, unless they have outgrown their receptacles. But if repotting is necessary because of loss of leaves at the base, or of decomposed material, the old compost and drainage should be removed, and if there are plenty of live roots some distance up the stem, so much of the lower part of it may be cut away as will bring the lowest pair of leaves on a level with the new material when again placed in the pot. Clean live sphagnum moss, mixed with small broken crocks, makes a suitable compost, which must be pressed firmly, and the drainage should be ample. The compost placed in the pots of this class of plants is more to hold them in position, and keep a supply of moisture around them, than as a supply of nutriment. These Vandas require a somewhat cool intermediate temperature. I have always found them to grow and bloom quite satisfactorily when staged on a damp bottom by themselves at one end of a Cattleya house.

CYPRIPEDIUMS, which are now pushing up their flower spikes, should be carefully staked as the stems attain sufficient length, and any that are in need of cleaning should have attention. The plants can then be arranged in the house in which they are to bloom, and there they may remain until the early spring months, when the potting season comes round again. Any Cypripediums which produce flowers during the summer, such as C. superbiens, C. callosum, and its variety Sanderæ, may still be repotted should they require it. Peat fibre and sphagnum moss in equal quantities makes a suitable compost for these plants. Not being strong-rooting plants, they should not be placed in large receptacles. They succeed when grown in a Cattleya house temperature, and water should be applied with caution until they become re-established.

DENDROBIUMS that have finished their growths should be thoroughly cleaned, and placed in their winter quarters in the resting house. This is easily accomplished now that they have all attained that condition, and if the house and plants are thoroughly cleaned they should not be much trouble until their flowering nodes begin to swell in the spring. Sufficient

water should be given to prevent them from shrivelling, and a dry temperature of about 60° will be almost their only requirements.

CATTLEYAS AND ALLIES.—During the next few weeks the autumn-flowering members of this large group will make a great show, and the houses will be very gay. Owing to the adverse conditions of the past four or five seasons, it is difficult to realise the great strides that have been made in these beautiful plants. Whenever the autumn shows are resumed we may look for displays of flowers undreamt of a few years ago. Any Cattleyas, Læliocattleyas, or other members of this large family, may still have attention as regards repotting, provided the plants are pushing new roots. The usual Cattleya compost should be used, but until the new roots have freely entered the new material, care must be taken that only sufficient water is applied to the new compost to prevent the plant from shrivelling. It will be observed how quickly the roots develop, and if the plants are kept on the dry side during the winter months, the new growths will break away readily, and with increased vigour in the spring.

CYMBIDIUMS.—Many of these useful autumn-flowering plants will, during the next few weeks, make rapid progress in the development of their blooms. Plants which are pushing up their spikes should have sufficient water at the roots to keep the compost moist, whilst such as are not showing may be kept on the dry side for some little time longer. The hybrids comprise a most interesting and beautiful class, which produce fine spikes of bloom, and as they last a considerable time, either as cut flowers or upon the plants, they are most useful.

DISAS.—The tuberous roots of these most attractive terrestrial Orchids are best repotted at this season, just as the new growths push up from the sides of the old flower spikes. The pots must be well drained, using a compost of equal portions of fibrous peat, osmunda fibre, and sphagnum moss, with a fair sprinkling of half-decayed leaves and course silver sand, or better still, powdered sand stone, all mixed thoroughly together. Recently there has been considerable discussion in regard to the use of leaf soil as a compost for these delightful Orchids, but to my mind there is more in making suitable conditions for them in their growing and resting season than in the matter of compost, as they have been successfully grown in different materials. After repotting one watering should be given to settle the compost around them, and then for some time spraying once or twice a day, or even more, according to the outside conditions will suffice to keep them moist. The house in which they are grown must be freely ventilated, with only sufficient heat to keep frost away from them in cold weather. They delight in a cool, moist, airy position at all times, and green fly, and thrip must be continually guarded against, but fumigation must not be attempted.

GENERAL REMARKS.—The placing of the plants in their winter quarters is one of the main things which should occupy our time during the present season, and every effort should be made to eradicate the insect and other pests which trouble us, always remembering that a dirty plant cannot thrive. With the many difficulties before us at the present time, it is not possible for all of us to do as we would like, but it is always advisable to have an ideal, a goal to be reached if possible, and it can safely be said that if something is attempted with energy and discretion, something will be done. Well thought out plans are great aids in the routine of work which is necessary, even in small collections of plants, especially in these days of shortage of material and labour.

CYCNOCHES STELLIFERUM, Lodd.—A plant of the rare Cycnoches stelliferum, Lodd., bearing a graceful raceme of its light green flowers, was exhibited at the R.H.S. meeting held on August 26th last, from the collection of H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood). It was shown under the more familiar name of C. Egertonianum viride, under which it was figured and described by Lindley in 1846 (*Bot. Reg.*, xxxii. t. 46), its distinctness from C. Egertonianum not then being understood. As a matter of fact the name C. stelliferum, Lodd., was then given as a synonym. The plant had been introduced from South Mexico by Messrs. Loddiges, with whom it flowered in August, 1843. It next got confused with C. Warscewiczii, Rchb. f., under which name it was exhibited at a meeting of the R.H.S. by Mr. W. Bull, in October, 1879. This plant bore an inflorescence of male flowers and one of females from either side of the same pseudobulb. The plant received a Botanical Certificate, being afterwards figured in the *Floral Magazine* (1879, t. 381). C. Warscewiczii, Rchb. f., has much larger flowers, and is believed to be the female of C. aureum, Lindl., a handsome Central American species, which it is desirable should be again introduced to cultivation. C. stelliferum, like several other species of this remarkable genus, is not common in cultivation, though it is occasionally met with. For example, a plant was exhibited by Messrs. Sander in 1909, and a year later both sexes appeared in the collection of the Rev. J. C. B. Fletcher, Mundham Vicarage, Chichester, both of these being recorded in our pages.

Now that we have correspondents in Central America, it would be interesting, and we hope possible, to ascertain the insects by which this remarkable genus is fertilised. In the case of Catasetum we know that two particular species of bee are concerned, and we should not be surprised to find that the same bees, or some closely allied species, are the fertilising agents in this case also. Our tropical friends have an advantage over us in this respect.

R.A.R.

ORCHID NOTES AND NEWS.

FROM the beginning of 1917 the Royal Horticultural Society has held its fortnightly meetings in the London Scottish Drill Hall, the Society's own hall at Vincent Square, Westminster, having been in the occupation of the Australian Imperial Forces. It is announced that the Royal Horticultural Hall will again be available for the meeting to be held on October 21st. At this meeting only plants for Certificate may be shown, as the British Fruit Show fixed for October 7th is postponed until the later date owing to the difficulty and congestion of traffic caused by the Railway Strike, and space will not be available for the usual groups. The Orchid Committee will meet at 11.45 a.m. The remaining meetings of the year are fixed for November 4th, 18th, and December 2nd.

The corresponding meetings of the Manchester and North of England Orchid Society at the Coal Exchange, Manchester, are fixed for November 6th and 20th, and December 4th and 18th. The Committee meets at noon, and the exhibits are open to members and the public from 1 to 4 p.m.

THE GENETICAL SOCIETY.—This is a new organisation, which has been established for the promotion of the study of Genetics, both scientific and economic. The preliminary meeting was held at the Linnean Society's Rooms on June 25th. The meetings are to be held in the various places where experimental work is in progress, and it is hoped that visits to practical breeders of plants and animals may be arranged. The Rt. Hon. A. J. Balfour has consented to become the first president of the Society, while Mr. M. Bateson, Miss E. K. Saunders, and Mr. A. W. Sutton have been appointed vice-presidents, and Prof. Punnett and Miss C. W. Pellew secretaries. The Committee consists of Mr. W. E. Agar, Prof. Biffen, Prof. Bourne, Mr. E. A. Bunyard, Mr. L. Doncaster, Sir A. D. Hall, Mr. A. W. Hill, Dr. Keeble, and Prof. A. H. Trow. In view of the difficulty of accommodating large numbers at some of the institutions to be visited, the membership was limited to 120. The first meeting of the Society was held at the Laboratories and Botanic Gardens, Cambridge, on July 12th, thirty-six members being present, when Miss Saunders gave an account of her researches with the Garden Stock, Matthiola incana, and Prof. Punnett dealt with Sweet Peas. Orchids will doubtless receive attention at some future meetings.

From our advertisement pages it will be seen that Mr. D. A. Cowan, lately with Messrs. J. & A. McBean, Cooksbridge, has now joined the firm of John Cowan & Co., Gateacre, Liverpool.

ORCHIDS IN SEASON.

THREE interesting and pretty hybrids are sent from the collection of J. Joicey, Esq., The Hill, Witley, Surrey, by Mr. J. Mackay. Odontoglossum crispum Leonora × Odontioda Charlesworthii is a form of Odontioda Madeline, and both in shape and in its dark crimson colour it most resembles the latter parent. Odontoglossum tigrinum × O. Rolfeæ is a form of O. Corinna, and has a yellow ground colour, with many brown spots on the sepals and petals, and some smaller ones on the lip. An analysis of the parentage shows that four species are represented in it, namely, O. Harryanum (which comes in through both parents), Pescatorei, crispum, and Hunnewellianum, so that it should develop into a good thing. The other appears to be new, and may be described as follows :—

ODONTIODA WITLEYENSIS (Odm. tigrinum × C. Nœtzliana).—A brilliant little hybrid, having scarlet flowers with a few white markings, and the lip light yellow in front. As Odm. tigrinum was derived from O. Facinator × Harryanum, the present hybrid may be said to come in between Odontioda Charlesworthii, Seuenacca, and Bradshawiæ. It should develop into a good thing when the plant becomes strong.

A photopraph of the handsome Brassocattleya Apollo (Bc. Veitchii × C. Mendelii), has been sent from the collection of Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury. The cross was made by the late Mr. O. O. Wrigley, but the seedling was raised by Mr. H. Thorpe, Middleton, who received a First-class Certificate for it from the Manchester Orchid Society. The flower from which the photograph was taken measured nearly seven inches across the petals, and is excellent in every respect.

ANSWERS TO CORRESPONDENTS.

[*Orchids are named and questions answered here as far as possible. Correspondents are requested to give the native country or parentage of plants sent. An* ADDRESSED *postcard must be sent if a reply by post is desired (abroad, reply postcards should be used). Subjects of special interest will be dealt with in the body of the work*].

J.M.—The reversion to colour may be due to one of the parents not being a pure albino. It is not uncommon in such cases, and also both albino and coloured forms have appeared from the same seed-pod.

Masdevallia Chimæra.—Remove the plant, and any others of the same section, to the Intermediate house for the winter. They will not thrive in the cool temperature of the Odontoglossum house during this period.

Beginner.—The loss of roots is probably due to the exhausted condition of the compost. Repotting was the correct treatment, and the plant will probably recover. Keep the new compost only slightly moist until new roots begin to push.

Photographs received, with thanks.—C R. ; J.J. : C.M.P.

C.H.L.—A name has not yet been found, but this and other matters will not be overlooked. Some notes are unavoidably postponed.

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Edited by R. ALLEN ROLFE, A.L.S.

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The Orchid Review

VOL. XXVII. NOV.-DEC., 1919. No. 323-324.

OUR NOTE BOOK.

FELLOWS of the Royal Horticultural Society experienced a pleasant surprise when the announcement was made that its own Hall, at Vincent Square, would again be available for the meeting on October 21st, and it was accepted as an augury of the early return of more normal conditions. The show on this occasion was devoted to British-grown fruit (postponed from October 7th on account of the Railway Strike), and consequently Orchid groups were excluded, but a number of special plants were submitted for adjudication by the Orchid Committee, who sat in the old annexe. Next season should see an increase in the number of exhibits, and before long it may be possible to hold another special Autumn Show of Orchids, for the one held before the war was a great sucess. It will, however, take a long time for our collections to regain their old condition after the experience of the last five years, though we believe that potting materials are again available.

A correspondent sends us some extracts on the species question, taken from a recent article. The writer complains that "the tendency now-a-days is to multiply species, quite small differences being considered sufficient to justify specific rank," and that it is "a source of worry to the gardener, who fails to see in such differences any tangible reason for distinctive names." He further remarks that Darwin looked at species as only strongly-marked and well-defined varieties, and with regard to geographical forms he said, "there is no possible test but individual opinion to determine which of them should be considered species, and which as varieties." The inference might have been that such plants should not be called species, especially as "nice botanical distinction is irksome," but it was not so. "It does not much matter to the gardener, whether a plant is recognised as a species or a variety of one. For his purpose he requires distinguishing names, the simpler the better, and shows his objection to double-barrelled names by declining to use them." "Does he really?" asks our correspondent. "How about Cattleya Mossiæ Reineckeana, and Cypripedium insigne Sanderæ?" And, we may add, Cypripedium Lawrenceanum Hyeanum?

For it was our correspondent's enquiry that caused us to look up the information given at page 194.

Another Orchidist asks for particulars about Mendelian hybridisation, by which it is said to have been "possible to combine in one stock the valuable characters of several." We do not know this particular brand, unless it includes the undesirable characters also. He further asks, very pertinently, "What is Mendelism?" and cites two recent definitions. One exponent says: "The foundation of the Mendelian principle lies in the fact that there are pairs of alternating characters, or allelomorphs, related to each other in such a way that the reproductive cells bear one or other of these characters, but not both. "Another speaks of the hereditary items contributed by two parents, divergent as regards certain characters, separating out in the germ cells of the offspring, without having had any influence on each other." Then we read of "similar allelomorphs" uniting to form "true-breeding, or homozygous individuals," and "dissimilar allelomorphs" yielding "hybrids, or heterozygous individuals." The different constituents of the latter are said to separate out again at some particular time, an exact knowledge of which is of "enormous importance, both from the theoretical and practical stand-point." It also seems necessary to distinguish the "fundamental make up of a plant" before "rapidly effecting desirable combinations of unit characters." We have had to condense the enquiry, but the essential point is, how many of these alternating units does each reproductive cell contain? and what happens when they fail to alternate?

To begin at the beginning, what is known as Mendelism is a by-product of hybridisation. Its phenomena were discovered accidentally about the end of the eighteenth century, by Knight, when experimenting in the improvement of garden peas. Some twenty years later the same phenomena among garden peas were observed independently by Goss and Seton. These phenomena (explained at pp. 134-136), attracted the attention of the German experimenter, Gärtner, who was familiar with the phenomena of hybridisation in other groups, and their abnormal character induced him also to conduct a series of experiments with peas, which confirmed the earlier observations. By the middle of the nineteenth century a mass of evidence on hybridisation generally had accumulated, and this led Mendel to search for some underlying principle governing the production of hybrids. By some unexplained coincidence he also chose garden peas for a series of experiments, the results of which he published in an elaborate paper in 1866. Mendel was apparently unaware of the work of his predecessors in this group, and spoke of the necessity of confirmation of the

law formulated for Pisum, a law which he recognised was not applicable to all hybrids. A few years later, Mendel conducted some experiments with Hieracium, and pointed out their quite different behaviour from those with Pisum, a character also found in Salix and various other plants. Mendel's papers were lost sight of until 1900. Their recovery and subsequent amplification need not detain us further. It is at least interesting to have carried the subject back to the eighteenth century, and to have shown how much Mendel himself overlooked.

So much for the history of the question. The various definitions that have been propounded must be left to take care of themselves, but we may attempt a short survey of the facts upon which they are based. Species reproduce themselves true from seed; Mendelians would add, because they are homozygous. Seed production is an adaptation for the preservation of the species, dating from remote times, and it is secured by the union of two reproductive cells, male and female, each containing all the elements necessary for the production of new individuals, similar to the parents, but without such union incapable of developing further. After uniting, they develop and mature. Under ordinary circumstances these reproductive cells are derived from individuals of the same species, and thus are alike in constitution, hence the phrase "like produces like." Owing to a variety of reasons, however, the male reproductive cell may be derived from another species, and hence is, in some respects at least, of different constitution from the female cell, yet is capable of fertilising it, the result being the production of a hybrid seed, which on germinating bears evidence of its dual origin. There is no other distinction, and no control can be exercised beyond that of selecting which particular fertilising cell to use.

Everything, then, depends upon the composition of the uniting reproductive cells, each of which, as we have already seen, contains all the elements necessary for the development of its own species. This is where the Mendelian conception, whatever it may be, comes in. The number of these elements is entirely problematical. They may be few, or they may be very numerous. They cannot be seen or handled, and they can only be identified by their behaviour. Mendelism observes certain results, and proceeds to account for them. Two species are crossed, and the resulting hybrid differs from both in certain characters. As the hybrid is half derived from each parent, it follows that the new characters have also arisen by minor contributions from each parent, the latter being termed factors, or unit characters, because they are supposed to separate again, *unchanged*, when the reproductive cells of the hybrid are formed. Each reproductive cell may contain one, two, or many units, and each one is

supposed to unite with a corresponding unit from the reproductive cell of the other parent on fertilisation. Mendel denoted these supposed units by the letters of the alphabet. The results of the union is not identical in all cases. Sometimes an intermediate condition results—as, indeed, would be expected—but in the case of peas, one unit seems to overpower the other, hence it is termed dominant, and denoted by a capital letter (say A), while the one that is eclipsed is called recessive, and denoted by the corresponding small letter (a). Additional units would be denoted, B b, C c, &c.

As to the number of alternating characters present in each reproductive cell, the answer is that it depends entirely on circumstances. A cross between two closely allied species would show a small number of such characters, while in a wide cross they would be far more numerous, the reason being that in the former case more of the characters are identical, and thus fail to alternate. Mendel himself remarked of the reproductive cells, "In the formation of these cells all existing elements participate in an entirely free and equal arrangement, by which it is only the differentiating ones which mutually separate themselves. In this way the production would be rendered possible of as many egg and pollen cells as there are combinations possible among the formative elements." Everything depends upon the antiquity of the character, a matter, so far as we can see, unaccounted for in the Mendelian philosophy. To give an example, a cross between two green-leaved Cypripediums would give a green-leaved hybrid, greenness in this case being homozygous. But now cross one of the same green-leaved species with one of the set having tessellated leaves, and the hybrid is at once heterozygous for the same character. The tessellated-leaved character is an adaptation of some antiquity, for the group has now broken up into quite a number of distinct species. Such illustrations could be given *ad infinitum*.

The same example illustrates one particularly weak point in the Mendelian philosophy. Neither greenness nor tessellation are dominant, in fact dominance is quite an exceptional character among hybrids generally, and it shows how unfortunate it was that Mendel should have selected such an exceptional group on which to found a theory of heredity, a fact which he himself realised when he came to compare his results with those obtained by Gärtner, Wichura, and others, in numerous different groups of plants. Mendelism is a term for what Mendel is supposed to have discovered. Mendel made experiments, discovered certain phenomena of hybridisation that were already known, and based upon them an elaborate mathematical theory, which is only applicable to an exceptional class of results. His discovery might better be defined as "Incompatibility."

BRITISH NATURAL HYBRID ORCHIDS.

(*Concluded from page* 143.)

Orchis latifolio-maculata, Towns. (*Fl. Hampsh.*, p. 341).—This hybrid was described by Townsend, in 1883, as found in meadows near the Lily Wood, Shirril Heath, Hampshire. Three years later it was recorded from Headington Wick Bog, Oxfordshire (*Druce, Fl. Oxf.*, p. 294), and in 1889 it was found in a rough pasture field at Egg Buckland, near Plymouth, by R. T. Archer Briggs (Rolfe in *Gard. Chron.*, 1889, ii. p. 10; Briggs in *Journ. Bot.*, 1889, p. 244), together with the parents. Since then it has been found in many other localities (*O.R.*, xxi. pp. 201, 202; xxvi. p. 164), and it may be looked for wherever the two parents grow together. It has been identified with O. Braunii, Halacsy, but this requires confirmation, because the Continental O. latifolia, otherwise O. majalis, Rchb., often has spotted leaves, and more than a single hybrid may have been included under the name. A further complication is pointed out below.

Orchis Aschersoniana, Hausskn. (latifolia × incarnata.—Recorded from near Winchester, by Ullmann (*Winch. Coll. Nat. Hist. Soc.*, 1911-13, p. 11), and from West Drayton, Middlesex (Rolfe in *O.R.*, xxvi. p. 162). It probably occurs elsewhere, and earlier records may be found when the confusion in the history of the parent species is cleared up. For example, Sculley, in 1916, remarked (*Fl. Kerry*, p. 279), that when O. latifolia and O. incarnata grow together, as they sometimes do abundantly, intermediate forms have been gathered, which could not be definitely referred to either, and a hybrid origin had been suggested.

Orchis ambigua, Kerner (incarnata × maculata).—Recorded as O. maculata × incarnata, from Compton, and near Winchester, Hampshire, by Mr. D. G. Lowndes (*Winch. Coll. Nat. Hist. Soc.*, 1911-13, p. 9; 1915-17, p. 13, t. 17), and afterwards (*O.R.*, xxvi. p. 164) connected with the continental plant, now known from Germany, France and Switzerland. We also believe that the plant figured as O. latifolia × maculata (*Proc. Bournem. Nat. Sc. Soc.*, iii. p. 41, t. 1; O. Braunii, *O.R.*, xxiii. pp. 367, 368, fig. 45) belongs here, for during a recent visit to Bournemouth, Mr. Sherring kindly presented the original specimen to the writer, and the leaves are narrow, with the strict habit of O. incarnata, but heavily blotched, and these characters, with the line-like markings on the lip, would indicate O. incarnata and O. maculata as the parents. The inflorescence only is shown in the figure.

Some additional hybrids have been recorded in this group, but we regard them, to say the least, as doubtful. They are the results of, (1), splitting O. prætermissa from O. latifolia; (2), splitting O. ericetorum from O.

maculata; (3), renaming O. ericetorum as O. maculata, and then making O. maculata into a new species under the name of O. Fuchsii. This has introduced the following additions (we enumerate them alphabetically): (1), O. ericetorum × Fuchsii; (2), O. ericetorum × incarnata; (3), O. ericetorum × latifolia; (4), O. ericetorum × maculata; (5), O. ericetorum × prætermissa; (6), O. Fuchsii × latifolia; (7), O. Fuchsii × maculata (= O. transiens, Druce); (8), O. Fuchsii × prætermissa; (9), O. incarnata × prætermissa; (10), O latifolia × prætermissa; and (11), O. maculata × prætermissa (= O. Hallii, Druce). Of O. Fuchsii × incarnata we do not find a record, though in the Linnean sense it would come under O. ambigua.

ORCHIGYMNADENIA HEINZELIANA, Camus (Orchis maculata × Gymnadenia Conopsea).—Gathered near Sevenoaks, in 1898, by Mr. Henry Peirson (*Journ. Bot.*, 1899, p. 360), and afterwards near Dorking, by Mr. F. A. Muirhead (*O.R.*, vii. p. 274; xii. p. 221). It is also known from near Winchester, and we regard the Orchis ericetorum × Habenaria Conopsea gathered by Mr. Marshall in West Sunderland, and in Forfarshire, and by Mr. Druce in Berwickshire (*Journ. Bot.*, 1907, p. 299), as forms of the same. The hybrid is also known from Austria and France, and has also been called Orchigymnadenia Legrandiana, but the above appears to be the earliest specific name.

ORCHIPLATANTHERA CHEVALLIERIANA, Camus (Orchis maculata × Platanthera bifolia).—Found on a large moor near Perth, in 1897, by Mr. Arthur Reid, among a profusion of the parents, and afterwards in a hayfield near Shepton Mallett, Somerset, in 1913 (*O.R.*, v. pp. 234, 235; xxi. p. 235). It has long been known as a French hybrid.

ORCHICŒLOGLOSSUM DOMINIANUM, Camus (Orchis latifolia × Cœloglossum viride).—Found in the Winchester district by the Rev. H. Quirke, and recorded as Habenaria Conopsea × Orchis latifolia (*Winch. Coll. Nat. Hist. Soc.*, 1911-13, p. 6), and as Habenaria Wintoni, Druce (*Rep. Bot. Exch. Club*, 1911, p. 33; 1917, p. 157, t. 10). Originally described from Germany. There appears to be a little doubt about the Orchis parent, and O. incarnata has been suggested, so that the name may cover more than a single hybrid. There is also a suggestion that the Orchis parent may itself be a hybrid.

ORCHICŒLOGLOSSUM MIXTUM, Asch. and Grabn. (Orchis maculata × Cœloglossum viride.)—See page 144 for history. We regard Orchis Fuchsii × Habenaria viridis (*Winch. Coll. Nat. Hist. Soc.* 1915-17, p. 12, with three plates), as identical. It is known from Germany and France, but is included under the preceding by Camus.

GYMNACAMPTIS ASCHERSONII, Camus (Gymnadenia Conopsea × Anacamptis pyramidalis).—Recorded from the Winchester district by the Rev. H. Quirke (*Winch. Coll. Nat. Hist. Soc.*, 1911-13, p. 12). Originally described from Germany.

Gymnabicchia Schweinfurthii, Camus (Gymnadenia Conopsea × Bicchia albida).—Received from the neighbourhood of Arisaig, Inverness, in June, 1898, and recorded as Gymnadenia Schweinfurthii, Hegelm. (*O.R.*, vi. p. 238), and as Gymnadenia Conopsea × albida (Volley Dod in *Journ. Bot.*, 1898, p. 352). It was originally described from the Austrian Alps.

Gymnaglossum Jacksonii, Rolfe (Gymnadenia Conopsea × Cœloglossum viride).—Found on downs near Winchester, by Mr. H. A. Jackson, and described as Gymplatanthera Jacksonii, Quirke (*Winch. Coll. Nat. Hist. Soc.*, 1911-13, p. 12, with plate), and afterwards as Habenaria Jacksonii, Druce (*Rep. Bot. Exch. Club*, 1911, p. 33). We do not find a continental record.

R. A. Rolfe.

I am much interested in your article at pp. 142-3, but there are one or two questions I should like to ask. Is the British Ophrys apifera × arachnites really O. Botteronii? I had a beautiful example from Folkestone this year, but in did not agree with Schulze's figure of O. Botteronii. The Kentish O. hybrida does not agree well with Reichenbach's figure, but it matches that of O. apiculata, Schmidt. If the rule is to assign the same name to all hybrids between the same two species, however much they differ *inter se*, then the name does not always connote the plant. If, on the other hand, different names are assigned to different hybrids between the same pair of species, where is the line to be drawn? We are on the horns of a dilemma. It seems doubtful whether it is wise to assign a distinctive name to a known natural hybrid, because it is not a fixed entity, though it was quite natural when they were regarded as new species. My experience is that natural hybrids are very rare, that two specimens are seldom exactly alike, and that most of them arise from new crossings between the two parents. Probably there are some which reproduce themselves, and have become more or less stable, and a few have recrossed with one or the other of the parents.

M. J. Godfery.

It seems almost necessary to give a distinctive name, and the rule is that all hybrids between the same two species are forms of one, however much they vary. We believe that variation is the root of the difficulty in the cases cited. One might substitute O. aranifero-muscifera for O. hybrida, but we doubt if anything is gained. In any case we deprecate different names for the same hybrid, preferring the addition of varietal names where necessary. The identification of natural hybrids is difficult enough, but who will tell us what Nature does with them when made? Do they disappear as fast as they arise? Do they perpetuate themselves by seed, originating hybrid races? Do they recross with the original parents, giving secondary hybrids? Are the latter to be assigned separate

names, or should they be regarded as varieties of the primary hybrid? They have sometimes been treated as varieties of the parent species, which they certainly are not, though they may occasionally revert to them. As to the two Ophryses mentioned:—

Ophrys Botteronii, Chod. (see p. 142), originally mentioned in a note in 1887 (*Not. Polyg. Eur.*), was described two years later (*Bull. Soc. Bot. Genev.*, v. p. 187) as a plant first seen in 1882, and annually since, occurring among O. arachnites and a few rare O. apifera. It was also found by M. Botteron, an amateur botanist, after whom it was named. O. apifera var. aurita, Gremli (*Neue Beitr. Fl. Schweiz*, iv. p. 31) was given as a synonym. In 1891, O. Albertiana, Camus, was described (*Bull. Soc. Bot. Fr.*, xxxviii., p. 43) as a hybrid between O. apifera and O. fuciflora (the latter synonymous with O. arachnites), from a plant found near Champagne, France. Three years later O. Botteronii was figured by Max Schulze (*Orch. Deutschl.*, t. 31 d). In 1902, O. insidiosa, Duffort, was described as a hybrid between the same two species (*Bull. Soc. Bot. Gers*, xi. p. 27), having been found near Masseube, France. In 1905 we find O. Botteronii var. Chodatii, Wilczek (*Bull. Herb. Boiss.*, ser. 2, vi. p. 324), this being a plant found in the delta of the Drance, near Amphion, with the same two species. Finally, in 1907, Brand changed O. Botteronii into O. apifera var. Botteronii (*Koch. Syn. Deutsch. Fl.*, ed., iii. p. 2438). We should much like to have materials for comparison, but the origin and parentage seems pretty conclusive.

O. hybrida, Pokorny (see p. 143), is admittedly variable, and the history has been very fully given (*O.R.*, xiii. pp. 233-235, fig. 56). The forms referred to it are clearly all derived from O. muscifera and O. aranifera, and until it can be shown that it recrosses with the parent species the matter had better rest where it is. Recrossing with both parents would give two secondary hybrids; also an interesting problem in nomenclature. Will no one attempt it?

R. A. Rolfe.

Læliocattleya exoniensis.—It may be remembered that much difference of opinion has been expressed as to the parentage of this handsome hybrid, the first Læliocattleya raised (see *O.R.*, i. p. 5). We have just stumbled across the following note about it, written as long ago as 1868, by Mr. J. Wills, in an account of the fine collection of Sam Mendel, Esq., Manley Hall, Manchester (*Gard. Chron.*, 1868, p. 1319). When speaking of Cattleyas, Mr. Wills mentioned "a fine plant of crispa superba, which Mr. Milford considers equal in beauty to Mr. Dominy's fine new exoniensis; he thinks, moreover, that crispa superba is one of the parents of exoniensis, Lælia purpurata not having the beautiful scent that C. crispa has. The fine plant of the last has a seed-pod on it nearly ripe, from which Mr. Milford is hopeful of producing some fine and highly-scented

varieties." It may be added that Cattleya crispa is synonymous with Lælia crispa, and that Mr. Milford's shrewd opinion has proved correct. The parents of Lc. exoniensis are now known to be L. crispa and C. Mossiæ, from which a similar hybrid has since been raised (*O.R.*, xi. p. 213). As to the seed-pod mentioned by Mr. Wills (the pollen parent is not stated), we fear that it came to nothing, for Cattleya seedlings were not easily raised at that period, and the collection was dispersed five years later.

It may be interesting to add that Lc. exoniensis was the pollen parent of Lc. fausta, the earliest secondary hybrid Orchid raised, in which the now well-known phenomena of variation were specially observed by Mr. Seden, and recorded by Mr. Day (see *O.R.*, xviii. p. 11). Cattleya Loddigesii was the seed bearer, and the seedlings began to flower in 1873. It was also utilised by Messrs. Veitch in two other early crosses, Lc. triophthalma, a seedling from Cattleya superba, which flowered in 1883, and Lc. Cassiope, a seedling from Lælia pumila, which flowered six years later. We believe that these old historical plants have now become very rare, which is to be regretted.—R.A.R.

BRASSOCATLÆLIA JOICEYI.

THE very beautiful hybrid here figured was exhibited at the Royal Horticultural Society's meeting on October 21st last, by J. J. Joicey, Esq., The Hill, Witley, Surrey (gr. Mr. J. Mackay), and received a First-class Certificate. It was derived from a cross between Brassocatlælia Cooksonii and Læliocattleya Thyone, and this is of somewhat complex ancestry, as the following analysis will show.

L. xanthina × C. Dowiana. — L. cinnabarina × B. Digbyana.
Lc. Ophir × C. Dowiana. — Bl. Gratrixiæ × C. Dowiana.
Lc. Thyone. × Bcl. Cooksoniæ.
Bcl. Joiceyi.

We thus see that it is the result of five separate crosses, and Cattleya Dowiana comes in from both sides of the ancestry, having indeed been used three times over, which would account for its preponderating influence in the hybrid. As regards the other three species concerned, we note the influence of Brassavola Digbyana in the shape and substance, and of Lælia cinnabarina in the undulation of the lip. L. xanthina can be traced in the more open shape and in the retention of much of the yellow colour. The

other Lælia may have exerted some influence in this respect, but colour is necessarily not represented in the photograph. It will be noticed that both the immediate parents of Brassocatlælia Joiceyi are secondary hybrids, and this would give an opportunity for selection, for secondary hybrids are generally variable, and the best forms would naturally be selected as parents, thus eliminating as far as possible undesirable qualities from whatever source they may be derived. It is this selection in the parents which is working

Fig. 12. Brassocatlælia Joiceyi.

such rapid improvement in the races of garden Orchids, for in no other way can the results be controlled. Brassocatlælia Joiceyi is a brilliant acquisition, both in shape and colour. All the segments are broad and well expanded, the sepals and petals being deep buttercup yellow, with a trace of red in the veining, while the disc and veining of the lip are golden yellow, shading off to cherry red, with a lighter, much frilled margin. Colour photography alone would do justice to some of the delicate shades of this charming flower.

CYCNOCHES VENTRICOSUM FROM CHIRIQUI.

IN a note on the two sexes of Cycnoches Dianæ (pp. 108, 109), we alluded to the recorded occurrence of four species of Cycnoches at Chiriqui, one of them being C. ventricosum, Batem. This record occurs in an enumeration of the Orchids collected by Warscewicz, the statement being that C. ventricosum grows on trees of the Chiriqui Cordillera, at 1,000 to 3,000 feet elevation, flowering in October (*Rchb. f. Beitr. Orch. Centr. Amer.*, p. 23). Warscewicz's plants were sent to Reichenbach for determination, and samples were sent by the latter to Lindley. The question having been raised whether the Chiriqui plant agrees with Bateman's original, we referred to the sheet in the Lindley Herbarium, and found an inflorescence of three flowers, labelled by Reichenbach himself, "C. ventricos. Tipi Happa, Warscewicz." Wondering where the locality could be, we searched a little further, and found Oncidium (Brassia) Helenæ, Rchb. f., recorded from the same place, with the further information that the locality is near "Punt Helena." Turning to the Royal Atlas, we find that Punta Sta. Helena is on the coast of Ecuador, west of Mt. Chimborazo, and that Warscewicz's locality, there recorded as Xipixapa, is a little to the north-east. Andre's more modern Atlas gives the spelling as Jipijapa, and as both X and J are pronounced as H, it is pretty evident that Warcewicz's spelling was a somewhat unsuccessful attempt to write the word phonetically. Veitch's Odontoglossum map (*Man. Orch.*, pt. i.), by the way, has the spelling Jypapa. This quite disposes of the Chiriqui habitat of the three-flowered inflorescence mentioned.

The sequel is interesting. Warscewicz's so-called C. ventricosum is not identical with Bateman's original Guatemalan plant, but agrees well with C. Lehmannii, Rchb. f., an Equadorean species of the same section, described at a later date, of which good specimens from Lehmann are preserved at Kew. Only male flowers are known. As to the so-called "Sexus?" of C. ventricosum from Chiriqui (a flower is preserved in Herb. Lindl.), this is different from the female of C. ventricosum, Batem., and is probably that of C. aureum, Lindl., another handsome Chiriqui species which has long been lost sight of. This also was collected by Warscewicz, and there are specimens preserved in the Lindley Herbarium, probably collected at the same time as the female, so that, in view of the known facts, it is a fair inference that the two represent the sexes of a single species. This will remove C. ventricosum, Batem., from the list of Chiriqui species, for the supposed "sexus" is apparently the female of C. aureum. The female of C. Dianæ, Rchb. f., has been accounted for (see page 107).

The botanical history of Cycnoches ventricosum is thus a remarkable

jumble, the name having been applied to five different plants: (1), the original C. ventricosum Batem., a Guatemalan species; (2), the green flowers shown in Bateman's plate 40 as produced by a plant of C. Egertonianum; 3), the female of C. Egertonianum, mis-called C. ventricosum by Lindley; (4), Reichenbach's so-called C. ventricosum from Ecuador, which is C. Lehmannii, Rchb., f.; and (5), Reichenbach's supposed sex of C. ventricosum from Chiriqui, which is probably the female of C. aureum, Lindl. The details have already been given. Lindley's enquiry, "What, then, is Cycnoches ventricosum?" has been answered in a somewhat unexpected fashion. R.A.R.

ORCHIDS FROM EXETER.

SEVERAL interesting and beautiful Orchids are sent from the collection of J. J. Neale, Esq., Oxton, Kenton, near Exeter (gr. Mr. Swinden). A fine flower of the New Guinea Hyalosema grandiflorum is one of seven borne by the plant, and must have made an effective picture, for the numerous hyaline spots on the dorsal sepal, from which the genus takes its name, give it a very marked character. Its history has already been given (see p. 130). Cœlogyne fuliginosa is a North Indian species, having buff yellow sepals and petals, and copious dusky brown veining on its prettily fringed lip. It is figured at t. 4440 of the *Botanical Magazine*, though the three flowers there shown normally appear in succession. Polystachya laxiflora, Lindl., is a West Tropical African species which bears short panicles of light yellow flowers, larger than those of the well-known South African P. pubescens. The other flowers are hybrids. Odontoglossum Cooksoniæ (percultum × armainvillierense) is a handsome thing, having exceptionally broad violet-purple sepals and petals, with a sharply-defined lilac apex, the lateral pair having also a few small spots, while the lip has a white apex and many small purple blotches behind. Miltonia Bleuana var. Queen Mary is a charming form, having a solid rose-purple blotch at the base of the petals, and a darker radiating mask on the lip, thus showing more of the Roezlii character than usual. Cypripedium Gaston Bultel var. King Edward VII. is a fine bold flower, more or less veined with purple-brown on the dorsal sepal, petals, and lip. Lastly, we have a remarkably dark form of Brassocatlælia Prince of Wales (Bc. Veitchii × Lc. Dominiana), having the sepals and petals of a uniform saturated carmine-rose, and the lip equally dark, with the typical Dowiana veining on the disc. It is a brilliant thing, and should be useful for recrossing with some of the finely-shaped Brassocattleyas that are somewhat deficient in colour.

A COLONY OF ORCHIDS.

AT page 106, we gave a summary of the Orchids found on a single tree in Queensland, these numbering seven out of a total of fifty plants, the majority of which were Cryptogams. "New Zealand could show a very good instance of the kind," remarks "M.F.," of Manaia, New Zealand (*Gard. Chron.*, 1915, ii. p. 181), "but I am too far away from the 'bush' to try and make a complete list at present. In the spring of last year, when away on a holiday, I came across an old Hinan (Elæocarpus dentatus) standing on the edge of a small patch of bush. The tree had been injured by fire five years back, and had come to the stage of only wanting an extra heavy gale to bring it down. It was just a mass of Orchids. I had never seen such fine specimens of their kind all grouped together. On a sheltered side, the trunk was coated with the tiny Bulbophyllum pygmæum, further round, Sarcochilus adversus held its own, and above, from the remnants of the branches, hung two species of Earina, E. mucronata and E. suaveolens, and last, but not least, an enormous clump of Dendrobium Cunninghamii in bloom. The Orchids of New Zealand seem to be very little known in England. They are not large or showy, but full of interest from a botanical point of view, and some are certainly worthy of notice from a horticultural standpoint. Dendrobium Cunninghamii and the two Earinas are extremely pretty, and some of the terrestrial ones are not to be despised. Some species of Pterostylis, Corysanthes, and Thelymitra, to name a few that are fairly abundant, are well worth a place in anyone's collection. I was sorry when at home a short while ago to find that even Kew could not show a single representative from New Zealand."

Here we find a total of five species growing together, and knowing the plants we can realise that it was an interesting sight. We should certainly like to see some of them at Kew, though it is by no means certain that they would develop there with their native vigour. And glancing through Hooker's *Handbook of the New Zealand Flora*, where 38 species belonging to 18 genera are enumerated, we cannot recall having seen one of them in cultivation. The date was 1864, and by the time that Cheeseman's *Manual* was published, in 1906, the number had grown to 55 species, of 21 genera. Should our friend return to England he might attempt to bring a few established plants in a Wardian case. Tubers of some of the terrestrial kinds could possibly be sent by post, when at rest. It may be added that two of the species, Dendrobium Cunninghamii and Earina mucronata, are figured in colour in Mrs. Hetley's *Native Flowers of New Zealand*, two Orchids out of a total of 36 selected plants.

R.A.R.

OBITUARY.

WILLIAM SWAN.—This able and experienced Orchidist passed away at Jamnagar Lodge, Staines, on October 3rd last, at the age of 78 years. Mr. Swan commenced his horticultural career in the nursery of Messrs. Hugh Low & Co., at Upper Clapton, in the early fifties, having for a co-worker his old schoolfellow, Mr. Harry A. Barnard, who remained with the firm until its dissolution, and then went to Enfield with Messrs. Stuart Low & Co.

The Orchids at Upper Clapton were then in poor condition, and Mr. Low decided to improve them, installing a new foreman and three assistants—German, Swiss, and French—with Mr. Swan, then a lad, as general helper. The plants were repotted, and the collection was extended by importations from Borneo, Burma, India, and the Straits Settlements. These were brought by slow sailing vessels, which in those days had to go round by the Cape, so that many of the plants arrived dead or in poor condition; the cases, moreover, generally being infested with cockroaches. The circumstances of these early days have been the subject of some amusing recollections by the deceased.

After two years at Upper Clapton, Mr. Swan entered the service of John Day, Esq., of Lower Tottenham, then a great lover and grower of ferns, though there were also a few Orchids, and it was when fetching a rare fern for Mr. Day from Messrs. Loddiges' Nursery at Hackney that he was shown the fine collection of Orchids grown there, and was much impressed with some finely-flowered plants of Aërides odoratum that were grown in baskets and stood about the floor. After three years' experience at Lower Tottenham he went to Bowes Manor, Southgate, as general foreman, and then occupied himself with landscape work at Strood Park, Kent, for a season, after which he returned to the service of Mr. Day, who in 1858 had moved to High Cross, Tottenham, and after building suitable houses, had taken up the culture of Orchids on an extensive scale, Mr. Swan being second gardener, under Mr. Stone. There were excellent opportunities for improvement at High Cross, and Mr. Swan speaks with enthusiasm of the splendid specimens of Aërides, Saccolabium, Vanda, and Phalænopsis then grown there. He again stayed three years, and has recounted how during three severe winters he often stayed until midnight, aud even until two or three o'clock in the morning, in order to keep the boiler fire working properly, and how, with the help of lantern or candle, he occupied his spare time making pencil drawings of some of the Orchid flowers. He also recalls a terrific storm which visited the district, during which nearly

every pane of glass in the houses was broken by hailstones, and many of the plants, especially Phalænopsis, were severely injured.

In 1870, Mr. Swan went to Manley Hall, Manchester, to take charge of the Orchids of Sam Mendel, Esq., and here he remained for three years, until, in April, 1873, the collection was sold by auction, realising over £4,300, His next charge was the extensive collection of W. Leech, Esq., at Oakley, Fallowfield, Manchester, where he had ample scope for his energies, and where we find him engaged in the fascinating work of hybridising Orchids, then in its infancy. He speaks of having hundreds of seedlings, though they probably represented very few crosses. His first hybrid flowered in 1876, having been derived from Cypripedium Dayanum crossed with C. barbatum, and was called C. Swanianum, Reichenbach remarking, "I am glad to have the honour of naming the plant in honour of its raiser," Mr. W. Swan. It is a very interesting hybrid, having retained the ciliate, unspotted petals of C. Dayanum, with the improved shape and much of the colour of C. barbatum. It seems probable that the experiment was commenced before he went to Fallowfield, for the seedling could hardly have reached the flowering stage in so short a time, but we have not found any record of this, nor yet of other Cypripediums that he may have raised at this period.

The only other hybrid of this period that we remember flowered in 1881. It was raised from Dendrobium nobile crossed with the pollen of D. aureum, and Mr. Swan has recorded that the seed was sown in January, 1875, the tiny seedlings were first observed in February, 1876, and early in 1881 several of them produced their first flowers. A year later it was described under the name of D. Leechianum, by Reichenbach, who remarked that it was so named by desire of Mr. Swan. It received a First-class Certificate from the R.H.S., in March, 1886, when exhibited by Messrs. Wm. Thompson & Sons, of Clovenfords, who had acquired some of the seedlings. It is now regarded as an improved variety of D. Ainsworthii, raised somewhat earlier from the reverse cross.

Mr. Swan remained at Fallowfield for thirteen years, and on the collection being sold, through the removal of the family to London, he was engaged by E. G. Wrigley, Esq., who had a large collection of Orchids at Howick House, Preston, Mr. Swan's first work being the potting of a batch of a thousand Cattleya Mossiæ, which were grown without shading of any kind, and flowered magnificently, one spike producing as many as five flowers. Two years later Mr. Swan was employed for a short time in the Public Parks, Preston, after which he was for five years in charge of the fine collection of G. C. Raphael, Esq., at Englefield Green, where Cypripediums were remarkably well grown, for he speaks of two-thousand flowers open together, and plants with thirty and forty flowers each. Here he was able to

resume hybridising, and raised some fine forms of C. Leeanum, nitens, and radiosum. We also recall C. Raphælii, derived from C. Crossianum × insigne. The seeds were sown on the compost of established plants, and germinated as freely as cress, so that he had hundreds of seedlings.

Mr. Swan then took charge of the gardens of J. P. Bryce, Esq., of Exmouth, for five years, when the removal of the family and sale of the plants necessitated another change, and this a final one. In July, 1899, he took charge of the garden and estate of Sir Edward Clarke, at Thorncote, Staines, which became Jamnagar House on its purchase by H.H. Maharajah Jam Saheb of Nawanagar (Prince Ranjitsinhji), in whose service Mr. Swan remained until his death. He continued his duties until May last, when he was taken ill, but rallied, and was able to be wheeled in a chair round his beloved garden and enjoy the sight of the Orchids. Three weeks before his death he was taken worse, and gradually slept away. He was laid to rest in the London Road Cemetery, Staines, on October 7th, in the company of a wide circle of friends, His Highness the Maharajah Jam Saheb of Nawanagar, and members of the local and northern Horticultural Societies with which he had been associated, being also present.

Orchids and Rooks.—We do not remember any particular instance of our native Orchids suffering from attacks of wild animals, and the following note from the pen of the late Prof. James W. H. Trail, Aberdeen, of whom an appreciative obituary notice has just appeared in the *Kew Bulletin*, will be read with interest. It appeared in 1893 (*Ann. Scot. Nat. Hist. Soc.*, 1893, p. 187), and we do not find any further reference to the subject in an exhaustive bibliography. "There is a piece of undulating moor about three miles from Aberdeen, dear to the botanists of that city, under the name of Scotston Moor. On this some years ago, various species of Orchids abounded, including Orchis maculata, O. latifolia, Habenaria Conopsea, and Habenaria bifolia, all plentiful. For a number of years the Orchids showed no signs of diminishing; nor did they appear to suffer from the attacks of any animal. But during a severe winter eight or ten years since the rooks, much straitened for food, turned to the Orchids and dug out and ate the tubers. On several days during that winter and in the succeeding spring, I observed the rooks in large numbers scattered over the surface of the moor, hard at work, and I was able to convince myself of the object of their search. The ground was full of holes made by them. Next summer the Orchids named had almost disappeared from their old haunts, showing the damage done to them by the birds. The raid has not been repeated, probably owing to the tubers being too few to offer much inducement to seek them out, and the Orchids are slowly regaining ground; but it will apparently be some years before the damage is wholly repaired."

ODONTOGLOSSUM CRISPUM QUEEN VICTORIA.

IT would be interesting to trace the origin of the numerous blotched forms of Odontoglossum crispum experimentally, and if we had to account for that of the handsome form here figured we would suggest, as at least possible, O. Stewartianum × crispum. We do not know the district from which it came, but a glance at the figure of O. Stewartianum (*O.R.*, xiv. p. 120, fig. 14) will show some marked points of resemblance. O. Stewartianum was derived from O. Andersonianum × O. crispum heliotropium, the latter a well-shaped lilac form with numerous minute dots on the segments. O. crispum Queen Victoria was exhibited at the Temple

Fig. 13. ODONTOGLOSSUM CRISPUM QUEEN VICTORIA.

Show in May, 1897, by Messrs. Hugh Low & Co., Upper Clapton, and received a First-class Certificate. The figure represents one of the original flowers. It is an elegant form, though without the broad, overlapping segments of some modern varieties. The ground colour is white with a flush of rose at the apex of the sepals, and the colour of the zone of large, irregularly-shaped blotches is dark purple-brown. The central blotch on the lip is much smaller, with numerous small spots on each side of the crest. We do not know where the plant is at present. If any one has a plant with the same origin as O. Stewartianum it would be interesting to cross it with O. crispum, and note the variation among the seedlings.

SOCIETIES.

Royal Horticultural.

THE usual fortnightly meeting was held at the London Scottish Drill Hall, Buckingham Gate, Westminster, on September 9th, and brought together an interesting display of Orchids, which gained three medals, one Award of Merit, and one Preliminary Commendation.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Sir Harry J. Veitch, W. Bolton, Arthur Dye, F. J. Hanbury, Walter Cobb, A. McBean, F. K. Sander, Stuart H. Low, and J. Charlesworth.

Award of Merit.

Læliocattleya Miranda exquisita (Dominiana × St. Gothard).—A very handsome hybrid, with large, very richly coloured flowers, the sepals and petals deep purple mauve, and the broad, ruby-purple lip with deep yellow veining at the base. Exhibited by Messrs. Charlesworth & Co.

Preliminary Commendation.

Læliocattleya Canary (Lc. Thyone × C. Fabia alba).—A promising seedling, bearing its first flower, which was clear yellow with some red markings at the base of the lip, and of good shape and substance.

General Exhibits.

C. J. Lucas, Esq., Warnham Court, Horsham (gr. Mr. Duncan), sent Cattleya Jules Gerard (Harrisiæ × Hardyana), a pretty light flower with pink veining on the lip.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), showed two pretty hybrids, Cypripedium Felicity and C. Mary Beatrice.

Pantia Ralli, Esq., Ashtead Park (gr. Mr. Farnes), sent a good form ot Brassocattleya Olympus (Bc. Maroniæ × C. Hardyana).

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora Medal for a choice group, consisting largely of Odontoglossums, Cattleyas, and Læliocattleyas, noteworthy among them being some well-bloomed examples of O. grande, and Lc. Maudiæ (C. Dowiana aurea × Lc. Neleus), yellow with purple-crimson lip. There were also the dark-purple Miltonia spectabilis Moreliana, Brassocatlælia Lilian (C. Iris × Bcl. Cooksonii), most like the former in shape, and having light orange yellow sepals and petals, a cherry red lip with lighter margin, and a white column, also other good things.

Messrs. Stuart Low & Co., Jarvisbrook, received a Silver Flora Medal for a fine group, including good examples of Lælia xanthina and crispa, the yellow Cyrtopodium Andersonii, various Oncidiums, white and coloured

forms of Cattleya Gaskelliana, and some excellent hybrids, among them being C. Mogul (Hardyana × Elvina), bright-rose with purple veining on the lip, C. Dupreana superba, and other summer-blooming kinds.

Messrs. J. & A. McBean, Cooksbridge, received a Silver Banksian Medal for a good group, including Cattleya Dowiana aurea, C. Hardyana alba McBean's variety, with pure white sepals and petals and a very richly-coloured lip, C. Prince John, C. suavior alba, C. Cowanii alba, and various other good things.

Mr. C. F. Waters, Balcombe, sent Cattleya Albion Waters' var. (Suzanne Hye de Crom × O'Brieniana alba), a promising white Cattleya.

At the meeting held on September 23rd there was again a moderate display, and the award list contained four medals, and a single Award of Merit.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), A. McBean, W. Bolton, G. Wilson, W. H. Hatcher, S. W. Flory, J. Charlesworth, J. Wilson Potter, Sir Harry J. Veitch, R. A. Rolfe, R. Brooman White, E. R. Ashton, and F. K. Sander.

Award of Merit.

Cattleya Æneas var. Rex (Venus × Dowiana aurea).—A handsome variety, having light buff-yellow sepals and petals of good shape, and the lip purple, with a large yellow centre and veining. Exhibited by Messrs. Flory and Black.

General Exhibits.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), was awarded a Silver Flora Medal for an interesting group, including some good Cattleyas and Læliocattleyas, the dwarf Kefersteinia laminata, Epidendrum (Nanodes) Matthewsii, Dendrobium Phalænopsis, Cycnoches chlorochilon, Cypripedium niveum, Bryan, Boltonii, and several others, Odontoglossum bictoniense album, O. Ducris (Duvivierianum × crispum), having light yellow sepals and petals spotted with red-brown, and the lip white with lighter blotches, Masdevallia muscosa, Miltonia spectabilis, and others.

J. E. Ansaldo, Esq., Rosebank, Mumbles, showed flowers of Cattleya Sybil var. Lens (Dowiana aurea × iridescens), chrome-yellow with the front lobe of the lip violet-purple, C. Kienastiana Rosebank var., and Læliocattleya Gothlab (Lc. St. Gothard × C. labiata).

G. W. Bird, Esq., Manor House, West Wickham (gr. Mr. Redden), sent Cattleya Freya Manor House var. (Dowiana × Mantinii), and a plant called Odontoglossum Dunkerque var. violacea (Harryanum × Thompsonianum), having purple flowers with some rosy mottling on the lip, but which the Committee thought was an Odontioda.

Messrs. Charlesworth & Co., Haywards Heath, received a Silver Flora

Medal for a fine group of Cattleyas, Læliocattleyas, &c., in which we noted good examples of C. Æneas, Thora, Miguelito, the pretty C. Ena (Fabia alba × Hardyana Countess of Derby), having white sepals and petals, and a purple lip veined with yellow, Læliocattleya Britannia, Salonica, St. George, Maudiæ, and others, Brassocattleya Luegman (C. Luegeæ × Bc. Leemaniæ), a large pink flower with deep orange throat to the lip; Bc. Maroniæ, Brassocatlælia Thompsonii alba, Sophrocattleya Andromeda (C. Octave Doin × S. grandiflora), Cirrhopetalum ornatissimum, and others.

Messrs. Flory & Black, Slough, received a Silver Banksian Medal for a pretty little group, including Brassocattleya Morna superba, Bc. General Diaz, Bc. Lotus, Bc. Ilene, Cattleya Mrs. J. Ansaldo var. citrina, with lemon yellow sepals and petals and a dark purple lip, Sophrocatlælia Hanningtonii, light yellow tinged with rose and the lip claret-purple, and others.

Mr. C. F. Waters, Balcombe, received a Silver Banksian Medal for a small group, including good examples of Læliocattleya epicasta and bletchleyensis, Cattleya Mrs. Pitt, and several other Cattleya hybrids.

Messrs. Stuart Low & Co., Jarvisbrook, sent Sophrocatlælia Edie Tack (Scl. bletchleyflora × C. Leda), a charming little plant, having apricot yellow sepals and petals, tinged with rose, and a violet-purple lip with a yellow centre.

The meeting held on October 21st was a particularly interesting one, for the Society was able to return to its own Hall at Vincent Square, which has for so long been in the occupancy of the Australian Military Authorities. Circumstances, however, limited its importance, so far as Orchids were concerned. It was the Annual Show of British-grown Fruits (which had been fixed for October 7th, but had to be postponed on account of the Railway Strike), and consequently groups of Orchids were excluded. Some fifteen plants were entered to go before the Committee, and of these one gained a First-class Certificate, and two others Awards of Merit.

Orchid Committee present: Sir Jeremiah Colman, Bart. (in the Chair), J. O'Brien (hon. sec.), Arthur Dye, W. Bolton, G. Wilson, R. G. Thwaites, Pantia Ralli, J. Charlesworth, A. McBean, W. J. Kaye, S. W. Flory, J. Cypher, H. G. Alexander, J. E. Shill, Sir Harry J. Veitch, J. Wilson Potter, and R. A. Rolfe.

First-class Certificate.

Brassocatlælia Joiceyi (Bcl. Cooksonii × Lc. Thyone).—A brilliant hybrid, in which the four species, Cattleya Dowiana aurea, Brassavola Digbyana, Lælia cinnabarina, and L. xanthina are combined in a rather complicated series of crosses, the flower showing most of the Cattleya ancestry. The broad sepals and petals are canary yellow with a little rosy

veining, and the ample lip copiously veined with golden yellow, shading off to cherry red at the very undulate margin. (It is figured on page 173.) Exhibited by J. Joicey, Esq., The Hill, Witley, Surrey (gr. Mr. J. Mackay).

Awards of Merit.

Cattleya Bellona albens (Dowiana × Maggie Raphael alba).—A beautiful variety, having broad, straw-yellow sepals and petals, and the front of the lip purple crimson. Exhibited by Messrs. J. & A. McBean.

Cattleya Thora var. elegans (Mrs. Pitt × Empress Frederick).—A finely-shaped variety, having light rose-purple flowers, and the lip rich crimson with a bright yellow throat. Exhibited by Messrs. Charlesworth & Co.

Other Exhibits.

Sir Jeremiah Colman, Bart., Gatton Park (gr. Mr. J. Collier), sent three fine things, Cattleya Eleanore var. Lady Mayoress (Hardyana × Warscewiczii var. Frau Melanie Beyrodt), having white sepals and petals, and a crimson-purple lip with yellow disc, Læliocattleya Lady Moore (Lc. epicasta Gatton Park var. × C. labiata Glasnevin var.), a beautiful hybrid, with rosy-mauve sepals and petals and a darker lip, and Odontoglossum Gattonthello (Maid of Gatton × eximium), blotched with violet-blue on a white ground.

J. Ansaldo, Esq., Rosebank, Mumbles, sent Sophrocatlælia Hanningtonii, Cattleya Æneas Rosebank var., and Brassocatlælia Callisto (Bl. Veitchii × Lc. callistoglossa), a very large lilac flower, with light-yellow disc to the lip.

Col. Stephenson R. Clarke, C.B., Borde Hill, Cuckfield, Sussex (gr. Mr. Gillett), sent Cattleya Dame Alice Godman, with charming lilac-blue flowers, recalling C. Portia cœrulea.

H. T. Pitt, Esq., Rosslyn, Stamford Hill (gr. Mr. Thurgood), sent the yellow Odontoglossum grande aureum Pitt's var.

Messrs. Charlesworth & Co., Haywards Heath, sent Brassocattleya Sofrano (Bc. Leemaniæ × C. iridescens), a light yellow hybrid with rosy shading, Læliocattleya Calypso (C. Mrs. Pitt × Lc. St. Gothard), a pretty rose-purple hybrid with darker lip, and Sophrocatlælia × Clio (Scl. Isis × S. grandiflora), bearing a very large deep red flower.

Messrs. J. & A. McBean, Cooksbridge, sent Cattleya Dinah (Elvina × Dupreana), a very fine rose-purple flower with darker lip.

Manchester and North of England Orchid.

At the meeting held at the Coal Exchange, Manchester, on September 4th, the members of Committee present were: R. Ashworth, Esq. (in the Chair), Messrs. A. Coningsby, D. A. Cowan, J. C. Cowan, J. Evans, J. Howes, D. McLeod, C. Parker, W. Shackleton, E. W. Thompson and H. Arthur (Secretary).

First-Class Certificates.

Cattleya Naidia exquisita (Hardyana × iridescens), and C. Hardyana alba superba, from P. Smith, Esq.

Brassocattleya Lady Veitch, and Odontoglossum grande West Point var., from S. Gratrix, Esq.

Brassocatlælia Tucuman (C. Rhoda × Bcl. Cooksonii), from W. R. Lee, Esq.

Awards of Merit.

Læliocattleya Ivernia Muriel Wilson, and Cattleya Harold alba magnifica, from S. Gratrix, Esq.

Cypripedium St. Germaine (Lord Wolmer × Germaine Opoix), from H. J. Bromilow, Esq.

Sophrocattleya Faboris (C. Fabia × Sc. Doris), from W. R. Lee, Esq.

Award of Appreciation.

Læliocattleya Golden Wren (Lc. Thyone × C. iridescens), from P. Smith, Esq.

Cultural Certificates.

Mr. A. Burns, for Vanda cœrulea, and a good group of Cypripediums.

Mr. J. Howes, for Odontoglossum grande, carrying nine good flowers on one spike, and Odontioda Brewii var. Phœnix.

Mr. T. Wood, for Cypripedium J. H. Veitch.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), were awarded a Silver-gilt Medal for a group, including fourteen beautiful plants of Vanda cœrulea, Cypripediums Transvaal, Mahleræ, Imperator, Lord Derby, Frau Ida Brandt, Stoneo-Rothschildianum, callo-Rothschildianum, Kubele magnificum, and others.

S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), was also awarded a Silver-gilt Medal for a group, including Cattleya Adula Her Majesty, Rothschildiana albescens, Prince John alba, Eldorado Wallisii, Læliocattleya Phœnix var. King George, Cypripedium Our Queen (a magnificent flower), and others.

P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson), staged Cypripedium Ranji; T. Worsley, Esq., Haslingden (gr. Mr. T. Wood), staged Cypripedium Dallas Carter Place var.; Messrs. Keeling & Sons, Bradford, staged Cypripedium Zebra, and Mr. D. McLeod, Chorlton, staged Cypripedium Holdenii.

W. R. Lee, Esq., Plumpton Hall (gr. Mr. C. Branch), and H. J. Bromilow, Esq., Rainhill (gr. Mr. W. J. Morgan), also staged interesting things which appear in the List of Awards.

At the meeting held on September 13th, the members of Committee present were: R. Ashworth, Esq. (in the chair), Messrs. A. Burns, A.

Coningsby, D. A. Cowan, J. Cypher, J. Evans, A. Keeling, E. W. Thomson, and J. Thrower.

First Class Certificates.

Cypripedium Rossetti var. Goliath ; from S. Gratrix, Esq.

Cattleya Capella alba var. Snow Queen (Mossiæ Wageneri × O'Brieniana alba) ; from P. Smith, Esq.

Awards of Merit.

Cattleya Mrs. Pitt West Point var., and C. Hardyana alba Regina, from S. Gratrix, Esq.

Cypripedium Roth-Maud (Rothschildianum × Maudiæ), from Mrs. Bruce and Miss Wrigley.

Brassocattleya Ilene var. lilacina (Bc. Maroniæ × C. Dowiana aurea), from P. Smith, Esq.

First-class Award of Appreciation.

Odontoglossum Victory var. Rufus (crispum The Baroness × ?), from Capt. W. Horridge.

Cultural Certificates.

To Mr. A. Burns, for Odontoglossum grande.

S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), staged a choice group, to which a Silver-gilt Medal was awarded. It included Cattleya flammea alba, O'Brieniana alba, Empress Frederick alba, Rothschildiana var. Pearl, Astron alportensis, and Soulange ; Brassocattleyas Sofrano and Ilene Gratrixiæ ; Sophrocattleya Faboris var. Gratrixiæ ; Cypripediums, The Baron, Gaston Bultel, Ellis Markendale magnificum, and others.

Mrs. Bruce & Miss Wrigley, Bury (gr. Mr. A. Burns), staged a good group, composed principally of fine examples of Odontoglossum grande, Cypripediums Io var. Argonaut, Sir Redvers Buller var. Beaute, Maudiæ magnificum, Boltonii, and delicatum ; Cœlogyne Veitchii, Cycnoches chlorochilon, and others, a large Silver Medal being awarded.

Capt. W. Horridge, Bury (gr. Mr. Coningsby), staged Odontoglossum Jasper, and O. Lambeauianum.

Messrs. Keeling & Sons, Bradford, staged Cattleya Comet, Mormodes citrinum, Cypripedium Chas. Sladden and C. Minos Lowii.

P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson), also staged some interesting things which appear in the List of Awards.

At a meeting held on October 2nd, there was a very poor attendance, owing to the Railway Strike, the members of the Committee present being : Messrs. D. McLeod, J. McNab, J. Howes, and E. W. Thompson. Mr. P. Weathers was invited to assist in adjudicating on the plants exhibited, and recommendations were made to the Committee sitting at the meeting on October 16th for confirmation of the awards voted.

P. Smith, Esq., Ashton-on-Mersey (gr. Mr. E. W. Thompson), staged Cattleya Lady Veitch Haddon House var. (Lueddemanniana alba × Warneri alba) (First-class Certificate), and Lælia Dayana cœrulea.

S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), staged Cattleya Adula alba (First-class Certificate).

At the meeting held on October 16th, the members of the Committee present were: Rev. J. Crombleholme (in the Chair), Messrs. A. Burns, D. A. Cowan, J. Cypher, J. Howes, A. Keeling, D. McLeod, J. McNab, Dr. F. T. Paul, E. W. Thompson, and H. Arthur (Secretary).

The First-class Certificates given to the plants, Cattleya Lady Veitch Haddon House var., from P. Smith, Esq., and Cattleya Adula alba, from S. Gratrix, Esq., exhibited at the previous meeting, were confirmed.

First-class Certificate.

Brassocattleya Oberon Sanders' var., from S. Gratrix, Esq.

Awards of Merit.

Odontoglossum illustrissimum Purple Emperor; O. crispum mosaicum; Cattleya Queen of Roumania (parentage unknown); and Cypripedium Rossetti Perfection, from S. Gratrix, Esq.

Cypripedium T. Abbot (Leeanum Clinkaberryanum × Harryi-Leeanum), from Messrs. A. J. Keeling & Sons.

Cultural Certificate.

Mr. A. Burns for a collection of Epidendrum vitellinum autumnale.

Mr. J. Howes for Brassocattleya Oberon Sanders' var.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), staged a fine group, to which a Silver-gilt Medal was awarded. Leading features were twenty beautiful plants of Epidendrum vitellinum autumnale, and ten of Cypripedium Maudiæ, other good things being C. Rossetti Bridge Hall var., C. Germaine Opoix Westfield var., C. Gaston Bultel var. King Edward VII., Odontoglossum grande aureum, Cymbidium erythrostylum, Vanda cœrulea, Cattleya Bowringiana, C. Portia, C. Mantinii nobilior, and others.

S. Gratrix, Esq., Whalley Range (gr. Mr. J. Howes), was also awarded a Silver-gilt Medal for a fine group, including Cattleya Snow Queen, C. Ivernia, C. Capella, C. Mantinii nobilior, Læliocattleya luminosa Golden Glow, Lc. Alex West Point var., Lc. bletchleyensis, Sophrocattleya Faboris excelsa, Cypripedium Actæus majesticum, C. Ernest Read, C. Chapmanii, some good Odontoglossums, and others.

The Rev. J. Crombleholme, Clayton-le-Moors (gr. Mr. E. Marshall), staged a collection of cut flowers of Cypripediums in the following varieties :—Lord Ossulston vars. Cherubicum and St. Mary's, leyburnense magnificum, Chapmanii magnificum, Gaston Bultel, Hassallii St. Mary's var., Charlesworthii rawdonense, King Arthur var. Borgoque, Mancunium,

Veronicus, and Ellerdale; an interesting series, for which Bronze Medal points were awarded.

Messrs. A. J. Keeling & Sons, Bradford, staged a fine Cypripedium, which appears in the List of Awards.

The Secretary regrets to report the death of W. R. Lee, Esq., of Plumpton Hall, Heywood, one of the earliest members, a lover of Orchids and a staunch supporter of the Society.

CALENDAR OF OPERATIONS FOR NOV.-DEC.

By J. T. Barker, Orchid grower to His Grace the Duke of Marlborough, Blenheim Palace, Woodstock, Oxon.

WE have now reached that season of the year when the shortness of the days, the absence of light, the great amount of moisture in the atmosphere, and the other changes of climate, makes it specially difficult to maintain that evenness of temperature which is so desirable for the well-being of our collections. It is most desirable at this season to maintain a proper balance of heat and moisture, and speaking generally, the atmosphere should be kept considerably drier than in the growing season. Fresh air should be admitted on all favourable occasions, and a damp, cold atmosphere must be avoided at all times, as such conditions bring the dreaded black spot, which not only disfigures, but may ultimately kill the plant. On the other hand, a hot and too dry atmosphere brings in its wake thrip and other insect pests, which also do irreparable damage.

Temperatures.—The lowest temperatures of the year may now be adopted, and every assistance should be given to plants that are at rest to remain so, whilst those which make their growth during the winter months should have every encouragement to make strong and clean growth. Suitable temperatures for the different divisions are as follows:—

East Indian house, 60° to 70°.

Cattleya House, 55° to 60°.

Mexican and Intermediate houses, 50° to 60°.

Cool house, 50° to 55°.

Only sufficient heat should be used in each department to maintain the required temperatures, for an excess of heat is always injurious. During extreme weather, when much fire heat is necessary, a close stuffy atmosphere can be prevented by an increase in the amount of atmospheric moisture, and by slightly opening the top ventilators.

Ventilation of the different houses during the damp cold days of winter requires the greatest attention, and even the most experienced cultivator is sometimes at a loss to know exactly the best thing to do, but as fresh air is

a necessity to the plants it must be admitted in such a way that draughts do not reach them. The results depend upon the conditions provided, and the cultivator makes his own plants, so to speak. If grown soft, without air and sunlight, the plants will not pass through the winter months like those that have received correct treatment. Coddling is always injurious, but not to go to the other extreme.

Watering.—More mistakes, perhaps, are made during the winter season in watering the plants than in any other detail of Orchid culture. Evaporation is now reduced to a minimum, and water should be applied with extreme care, the condition of each plant being carefully observed. Those at rest should have sufficient only to keep them plump and sound, whilst those that are making growth should have sufficient to keep them slowly moving. In all cases the compost should be allowed to become dry before renewing the application. Faulty watering both ruins the compost and destroys the roots, hence the necessity of close attention to this matter, which is one of the most essential details in Orchid cultivation.

Cleanliness is essential, and now that the potting of the plants is not so pressing, every opportunity should be taken of thoroughly cleaning the houses and their inmates, the former by washing with soap and water, both the glass and woodwork, and the latter by removing all dirt and insects which may have accumulated upon them. Owing to the recent shortage of labour, there is much work of this nature to be brought up to date, and the present season is one when some of the arrears may be overcome.

Miltonias.—Plants of M. vexillaria and its hybrids which were potted soon after their flowering period was over will now be in active growth, and rooting freely, and being well established in the new material, may have water applied to them whenever they become dry. They delight in a moderately moist position in the Cattleya house, and should be elevated well up to the glass, where they will receive every particle of light possible. The autumn-flowering varieties of M. vexillaria, as Leopoldii and superba, which have just passed out of bloom, may be repotted, if the young growths are of sufficient strength and about to push new roots. The form of M. vexillaria known as var. robusta, flowers later than the type, and may be treated like the autumn flowering varieties. The hybrids are irregular in their flowering season, and may have new compost given them whenever the young growths are in the desired condition. Failure with these plants is often the result of allowing the compost to become sour and decomposed. Should cold weather prevail, necessitating the use of much fire heat, a strict watch must be kept for yellow thrip, which is very partial to these plants, and soon marks their thin and delicate leaves, if not eradicated.

Cattleyas and allies are more appreciated during the dark days of winter than perhaps at any other season, and now that there are so many

fine autumn and winter-blooming hybrids (including Læliocattleyas and Brassocattleyas) there is no difficulty in maintaining a display of their beautiful flowers. The remarks previously made regarding their culture should be closely followed during the present month, and any that are in need of new material may still be taken in hand, if the old material is picked out, and the new material is kept on the dry side until the new roots have taken hold of it.

Sophrocattleyas and other Sophronitis hybrids may be treated like Læliocattleyas. Some individual varieties require special treatment to get the best out of them, some thriving much better under warmer conditions than others. During this sunless time of the year, all should be stood well to the glass so that they may receive the maximum amount of light.

Mexican Lælias delight in more sunlight than most Orchids, and during their growing season should only be given sufficient shade to prevent scorching during the hottest part of the day. Fresh air should be admitted to them whenever possible. The early varieties will now be opening their flowers; others are later, and by judiciously manipulating them the blooming period may be considerably extended where they are grown in sufficient quantities. L. autumnalis and its chaste variety alba, with L. albida and L. furfuracea, will also be in bloom. These like to be kept slightly cooler whilst making their growth, as also does the refractory L. majalis, which should always enjoy a light position. When their flowering period is passed, give the plants a good rest, allowing only sufficient water to keep the plants from shrivelling. Pot firmly, as soon as young roots are about to push, in good rough osmunda or other fibre. A temperature of about 55° F. by night, and a comparatively dry atmosphere should be aimed at during the winter months.

Vandas.—V. cœrulea, for the most part, will have passed the flowering stage, and should be rested in a temperature of about 60° F., paying strict attention to the ventilation and the atmospheric condition of the house. Very little water at the roots will be needed, only sufficient to keep the plants from shrivelling. Vandas of the tricolor and suavis group may be repotted, if they have lost their leaves and become leggy, or are in need of new rooting material. This operation should only be performed when real necessity arises, as they resent root disturbance at any time. Live sphagnum moss pressed firmly among the roots makes a suitable compost, and broken crocks may be added to make the whole porous. Ample drainage is necessary, and each stem should be made secure, and the moss kept alive by frequent sprinkling with water whenever it becomes dry. The plants should be stood on a damp bottom, and a temperature of 60° to 65° F. maintained. V. teres, having now completed its growth, and the tips of the roots being sealed over, should be allowed a long season of rest,

affording only sufficient water to prevent shrivelling. Give all the light possible, in a house having a warm intermediate temperature. V. Hookeriana and the hybrid V. Joaquimiæ should remain in the Warm house until their growth is completed. V. Amesiana, Kimballiana, and Watsonii, whilst pushing their flower spikes, should have the compost kept moist, but the supply of water should be reduced as soon as the flowers expand, which will keep them a longer time in good condition. When their flowering season is over only sufficient water is needed to prevent shrivelling. These terete-leaved plants need a long rest, and are capable of withstanding considerable drought without injury.

Cypripediums.—The winter-flowering section of these useful plants will be in full beauty, and where an up-to-date collection is grown will make a delightful display. The ease with which they can be grown, their floriferousness, and the lasting quality and beauty of their flowers, are all well known, and need no recommendation from me. Another advantage to those in or near large towns is that they suffer less from smoke and fog than almost any other Orchids. Cypripediums are always in active growth, hence absolute dryness at the roots is injurious. During their flowering season the minimum amount of moisture at the roots is required, but, whenever the compost becomes dry the plants should be watered, care being taken that they become fairly dry between each application. A moist atmosphere must be maintained at all times, but care should be taken to prevent saturation when the temperature is low. During their flowering period a night temperature of about 60° F., with a slight rise during the day, will suffice. When the flowering period is passed any necessary potting may be undertaken, using a compost as previously advised.

Odontoglossums.—The species and hybrids of this genus that were potted in September will by now have filled their pots with roots, and may be afforded more liberal supplies of water. The usual precautions are necessary, especially at this season, against keeping the compost in a saturated condition. Efficient drainage is important, and it should always be remembered how readily water passes away from them in their native homes. Odontiodas are of a similar nature to Odontoglossums, and require the same treatment.

Calanthes.—As varieties of the vestita section pass out of flower, the plants should be placed in a dry position close to the roof of a Warm house, where the light will assist in maturing the pseudobulbs. Water must be withheld till after the plants are repotted in the spring.

Zygopetalums are now growing freely, and will require water whenever they become dry at the roots. The popular *Z.* Mackayi produces its flowers during the winter, and owing to their colour are most acceptable. These plants when in full growth require an abundant supply of water, and, as

their thick fleshy roots resent a sour compost, it may be advisable when flowering is over to repot any that require new rooting material. A suitable compost is that advised for the green-leaved Cypripediums. *Z.* Mackayi, crinitum, Clayi, and several others grow well in a warm shady corner of the warm Intermediate house, elevated near to the glass to receive as much light as possible at this season of the year. The rare *Z.* Ballii, now in flower, requires the same treatment as *Z.* Mackayi. *Z.* maxillare and its variety Gautieri succeed best when grown on the pieces of tree fern on which they are usually imported. They are now at rest, and should be suspended from the roof of the same house, and kept moderately moist at all times. *Zygocolax* Veitchii and others thrive under the same conditions. *Zygopetalum* rostratum and *Z.* Roeblingianum should be grown in the warm, moist, plant stove, whilst *Z.* Burkei requires Cool house treatment. The miniature Promenæa xanthina, stapelioides, and Rollissonii also succeed suspended from the roof of the Cool house. Bollea, Pescatorea, and Warscewiczella, sometimes included in *Zygopetalum*, are Intermediate house Orchids which are too seldom seen in good condition in modern collections. Having no pseudobulbs, and being seldom inactive, they require very careful treatment, and should never be allowed to become quite dry. Bollea cœrulea and Pescatorea Klabochorum are two of the finest species.

Dendrobiums are now resting, and should not be unduly excited until the days begin to lengthen and the sun gains power. No good purpose can be served by trying to force them into flower in mid-winter. For the cool resting kinds, guard against the possibility of the temperature becoming too low, for if this happens the plants, although showing no signs of injury at the time, are greatly weakened, and often collapse during the following season. From 56° to 60° F. is a suitable temperature to aim at, with very little atmospheric moisture. As soon as flower buds are seen, they should be given slight encouragement, so that they gradually grow and expand.

General remarks.—Advantage should be taken of this comparatively quiet period to facilitate the work for next year. Stocks of potting materials should be got in, and prepared ready for use as far as possible, so that the work of potting may be carried out expeditiously when the busy season arrives. There are also arrears of various kinds to make up, and these should be taken in hand as time and opportunities present themselves. We have passed through a period of unexampled difficulty during the last five years, but may now hope for a gradual return to normal conditions, when our collections should be able to regain their old brilliance. In concluding the Calendar for the year, I should like to congratulate the Editor on his success in keeping the *Review* alive and maintaining its interest during such a trying period. May he reap the reward of his zeal and energy in a prosperous future.

BRASSOCATTLEYA APOLLO.

(*See Frontispiece*).

THE Frontispiece to the present volume represents a very fine form of Brassocattleya Apollo (Cattleya Mendelii × Brassocattleya Veitchii, from the collection of Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury (gr. Mr. A. Burns), which was briefly noted at page 164. Miss Wrigley, who kindly sent the photograph, remarks that the cross was made and the seed pod ripened by her father, the late Mr. O. O. Wrigley. Seeds were sent to Mr. H. Thorpe, of Middleton, who raised the seedling, and gained a First-class Certificate for it from the Manchester & North of England Orchid Society. It was afterwards purchased by Mr. Wrigley and returned to Bridge Hall. We find that the plant was exhibited, and the award made on May 11th, 1916 (*O.R.*, xxiv. p. 158), though by some accident it was recorded as Brassocatlælia. The same cross was alo made by Messrs. Armstrong & Brown, Tunbridge Wells, who flowered a seedling in the previous November, and exhibited it at a meeting of the R.H.S. The plant here figured was called Bc. Apollo var. Rhodesia, but we do not know in what particular respect it differs from the earlier seedling. It is an extremely beautiful form, and the flower shown measured $6\frac{7}{8}$ inches from tip to tip of the petals, and eight inches from the apex of the dorsal sepal to that of the lip. The colour is light blush, with a yellow disc to the elegantly fringed lip.

Cypripedium Lawrenceanum Hyeanum.—A question has been raised as to the origin of this well-known albino. It was recorded in 1886, under the name of Cypripedium Hyeanum, Lindley, two plants having been exhibited at the R.H.S. meeting held on April 27th, one by the Compagnie Continentale d'Horticulture, Ghent, the other by Mr. R. B. White, of Earlsfield, and each receiving a First-class Certificate (*Gard. Chron.*, 1886, i. p. 567). M. L. Masereel then wrote (p. 590) that the Ghent plant flowered out of a batch of C. Lawrenceanum which was imported through Mr. Low, of Clapton, and that M. Jules Hye, of Ghent, had secured it for his fine collection. He also remarked that "Lindley" was probably a mistake, and asked the origin of Mr. White's plant. To this Mr. W. Gilbert replied (p. 662), that it was bought of Messrs. Hugh Low & Co., of Clapton, and consequently has exactly the same origin as M. Hye's plant. Then came the following note from Reichenbach (p. 680):—

Cypripedium Hyeanum, L. Lind. & Rod.—Mons. Jules Hye Leysen, of Gand, was so very kind as to send me the only flower we have had an opportunity of seeing. I immediately thought it might be an albino of Sir

Trevor Lawrence's Cypripedium. It is pallid all over without any tint of purple, has even green veins on the vexillar dorsal sepal. Even the leaves are very pallid, as I had guessed, and as Mons. Hye Leysen ascertained. But this pallor is all. I am persuaded we must regard it as Cypripedium Lawrenceanum variety Hyeanum, the name having been given, otherwise we might better call it "Mons. Hye Leysen's individual." The horticultural world may be pleased with such a thing, but the botanists will not feel over-excited by such individuals. The history is simply, that it was found at the old establishment of Linden amidst a mass of typical C. Lawrenceanum. There is but one plant. My old friend Professor Hackel, of Leitmeritz, in Bohemia, told me of a single white Cypripedium Calceolus having been found among thousands of the normal ones."

It must have been about this time that the plant was figured in *Lindenia* (i. t. 42), as C. Hyeanum, L. Lind. & Rod. (with the name C. Lawrenceanum Hyeanum as a synonym), and the record that it appeared in a mass of C. Lawrenceanum in the Ghent establishment. Thus we have conclusive evidence that it came originally out of an importation by Messrs. Hugh Low & Co., but whether there were originally two plants or a single one that was divided is not clear. In any case it is an albino of C. Lawrenceanum. R.A.R.

ORCHID NOTES AND NEWS.

IN a note at page 163 it was pointed out that the Royal Horticultural Society would be able to return to its own Hall for the meeting of October 21st, and for subsequent meetings, of which three others, November 4th, 18th, and December 2nd, would complete the programme for 1919. The dates of the two meetings for January, 1920, are the 13th and 27th. The Orchid Committee meets at 11.45 a.m.

The corresponding meetings of the Manchester and North of England Orchid Society, are November 6th and 20th, and December 4th and 18th, 1919, and January 8th and 22nd, 1920. The Committee meets at noon, and the exhibits are open to inspection from 1 to 4 p.m.

At the R.H.S. Orchid Committee meeting held on September 9th, a letter was read from a correspondent regretting that, owing to the show of British-grown Fruit, the Orchid Committee was not sitting for a whole month. He also asked the Committee to waive the rule by which awards are not given to cut spikes, owing to the difficulty of bringing plants to London from a distance. The question of a meeting on October 7th, was referred to the Council, but the Committee decided to adhere to their rule that cut flowers should not receive awards except in very exceptional cases. At the

meeting held on September 23rd, Sir Harry J. Veitch informed the members that the Council had decided not to alter the arrangements for the current year, but that on regaining possession of their own Hall at Vincent Square, the required facilities would be provided at future shows of the kind.

ORCHIDS IN SEASON.

A FLOWER of Cypripedium nitens-Leeanum var. Oswaldii (Leeanum Clinkaberryanum × nitens Wrigleyanum) is sent from tha collection of Mrs. Bruce and Miss Wrigley, Bridge Hall, Bury (gr. Mr. A. Burns). The dorsal sepal is very light green, with numerous brown dots and a white margin, while there is a narrow brown line and a few dots on the petals. It received an Award of Merit from the Manchester Orchid Society on November 21st, 1918 (see p. 30).

Several interesting Cymbidiums are sent from the collection of G. Hamilton Smith, Esq., Northside, Leigh Woods, Bristol, by Mr. G. Walker. Flowers of C. Orion are from the reverse cross of the original, and have the sepals and petals suffused with light rose, and the lip crimson, copiously lined and dotted with dark brown. The others are as follows:—

Cymbidium Norma (Winnianum × Dayanum).—Sepals and petals light yellow, with numerous dark lines on the lip, which most resembles that of C. Dayanum in shape. The spike at present bears eight flowers.

Cymbidium Argo (Winnianum × erythrostylum).—Flowers of two seedlings are sent, these having light yellow sepals and petals, lined with red, and the lip with darker markings, and somewhat resembling C. erythrostylum in shape. The spike bears nine flowers.

Cymbidium Ceres (Cravenianum × insigne).—Flowers rather large, light yellow in colour, with light red stripes on the sepals and petals, and the lip darker, with numerous brown, dotted lines, and somewhat villous in front, somewhat recalling C. giganteum.

ANSWERS TO CORRESPONDENTS.

R.C.G.—The matter is receiving attention. Dried flowers would be very acceptable, for we know that your district is rich in interesting botanical species, as well as some showy ones.

C.S.—Many thanks.

G.W.H.—Negatives received, with many thanks.

C.H.L.—Unavoidably postponed till next month, with some other matters.

Hybridist.—The matter is dealt with on an earlier page. We have a note on the other questiou for an early issue.

Errata.

Page 9. For "Disa longilabris" read "Herschelia longilabris." The author of H. hamatopetala and H. Goetzeana should read "Kränzl."

P. 71. The omitted name of Odontoglossum Fascinator × crispum Lucianii is "O. Erzeroum."

P. 136. For "Lotzy" read "Lotsy."

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